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(54) METHOD AND SYSTEM FOR MULTI-CARRIER PACKAGE TRACKING

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(52) **U.S. Cl.** **705/28**; 705/27; 705/26
(58) **Field of Search** 705/26, 27, 28

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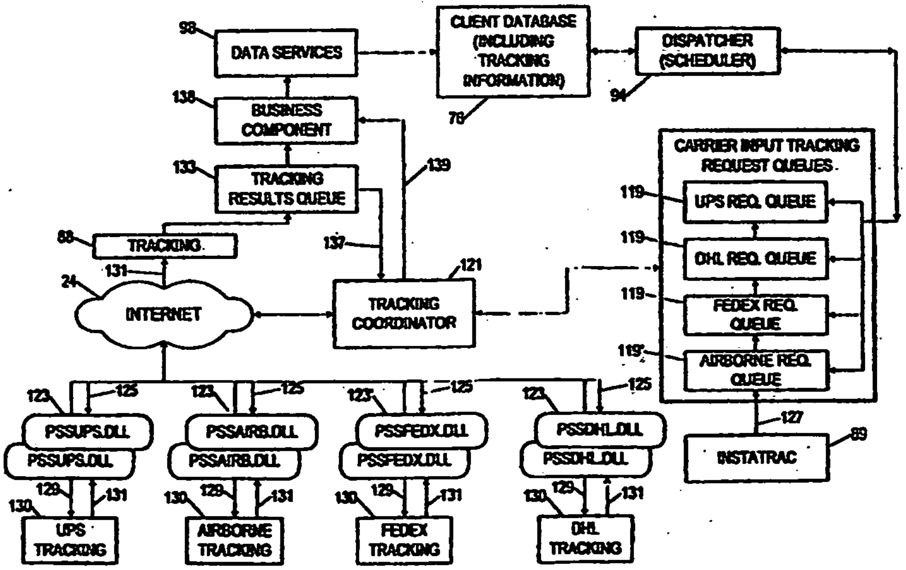
(57) ABSTRACT

A tracking system and method uses a multi-threaded controller to automatically and periodically generate tracking objects that are presented to carrier tracking websites. The tracking objects are retrieved from input queues that receive tracking requests from a scheduler. The carrier tracking website updates the status of package delivery which in turn updates the data in the shipping system server with respect to tracking information. This updated information can be used to automatically generate E-mail notification of package delivery as well as for updated purposes. An instant track component allows a user to obtain prioritized tracking information from the associated carrier tracking website.

15 Claims, 7 Drawing Sheets



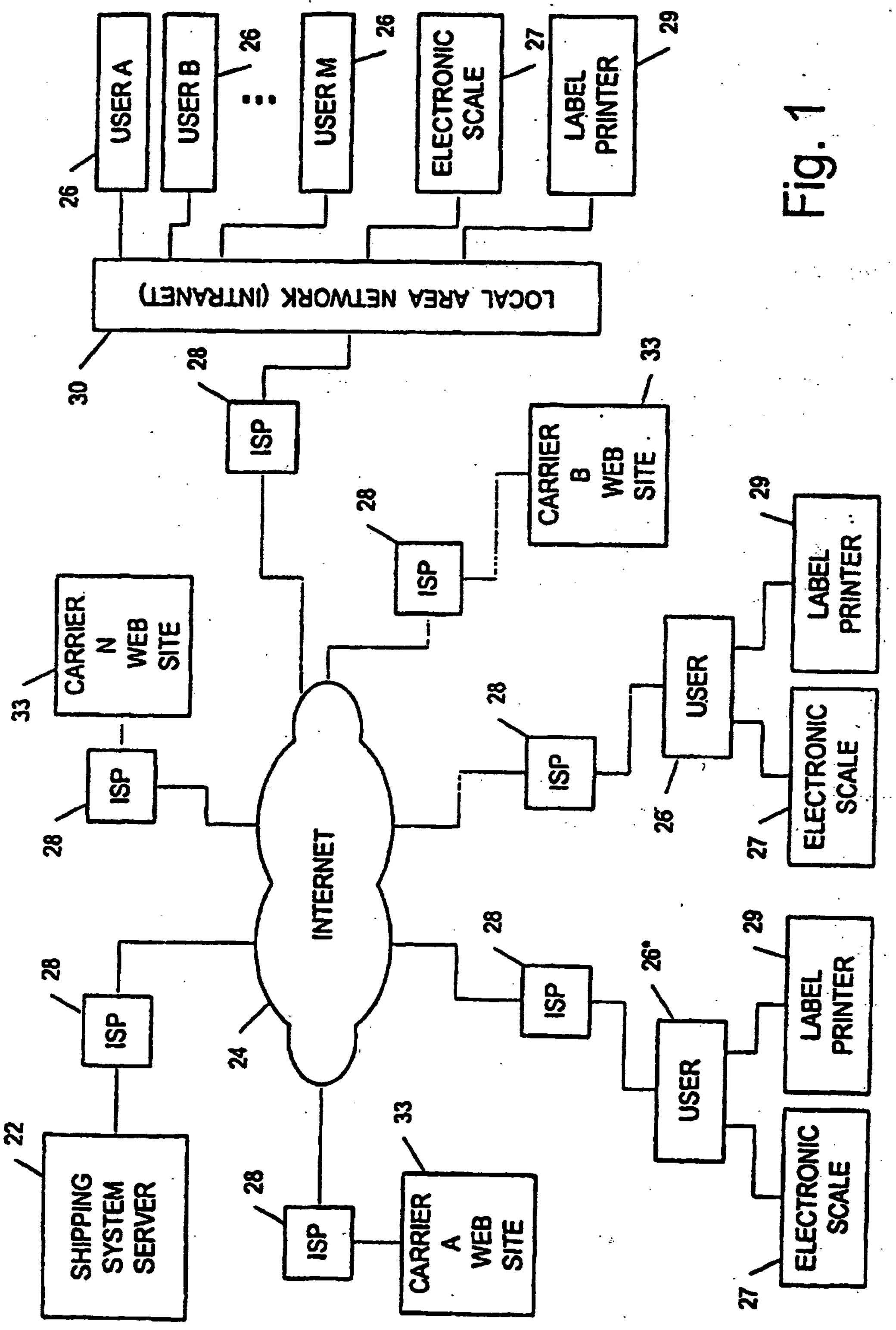

USER A
USER B
USER M
ELECTRONIC SCALE
LABEL PRINTER
26
26
26
26
27
29
LOCAL AREA NETWORK (INTRANET)
30
ISP
28
CARRIER B WEB SITE
33
CARRIER N WEB SITE
33
ISP
28
INTERNET
24
USER
26
LABEL PRINTER
29
ELECTRONIC SCALE
27
ISP
28
USER
26'
LABEL PRINTER
29
ELECTRONIC SCALE
27
SHIPPING SYSTEM SERVER
22
ISP
28
CARRIER A WEB SITE
33

Fig. 1

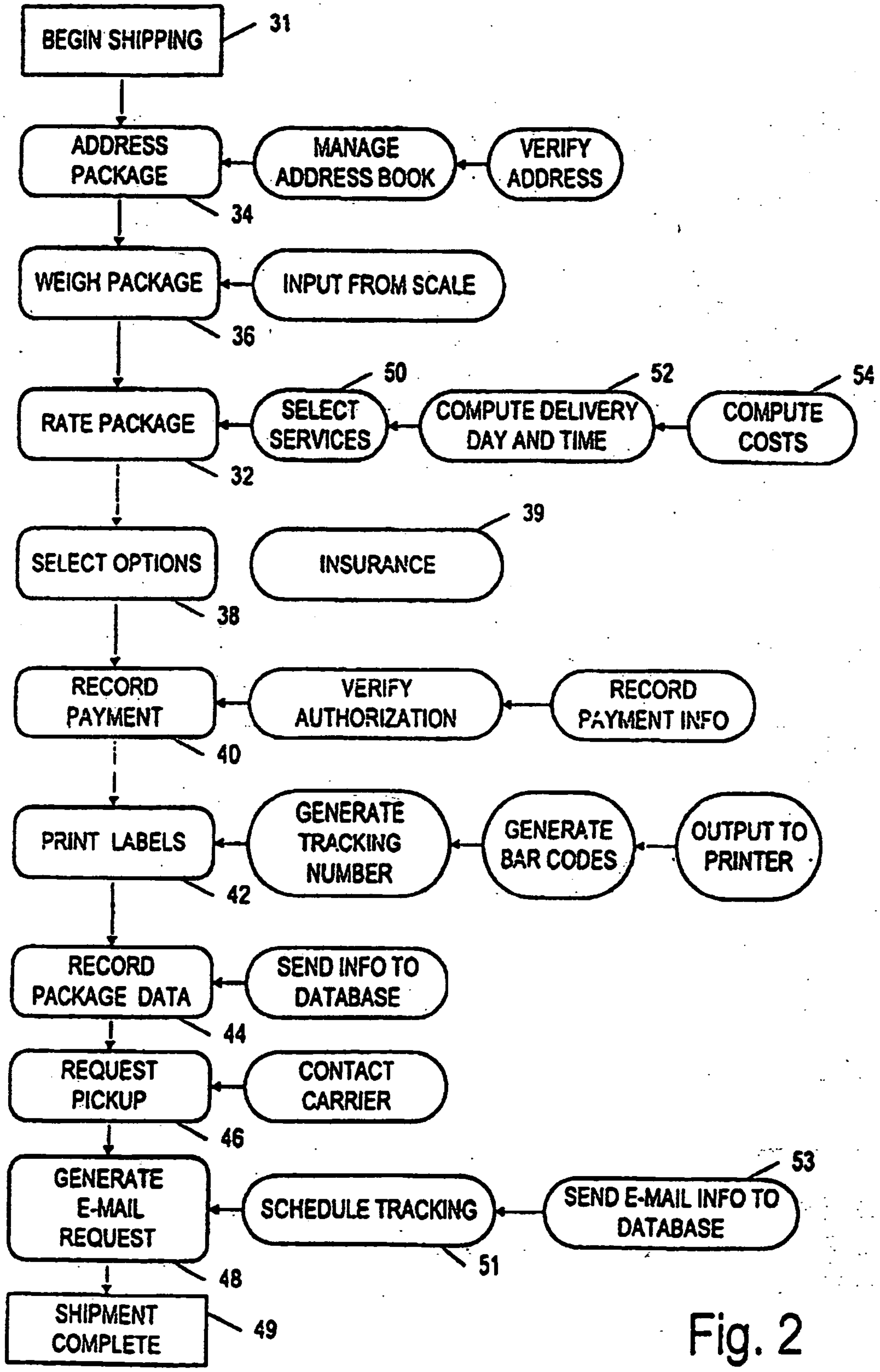

BEGIN SHIPPING
31
ADDRESS PACKAGE
MANAGE ADDRESS BOOK
VERIFY ADDRESS
34
WEIGH PACKAGE
INPUT FROM SCALE
36
50
52
54
RATE PACKAGE
SELECT SERVICES
COMPUTE DELIVERY DAY AND TIME
COMPUTE COSTS
32
39
SELECT OPTIONS
INSURANCE
38
RECORD PAYMENT
VERIFY AUTHORIZATION
RECORD PAYMENT INFO
40
PRINT LABELS
GENERATE TRACKING NUMBER
GENERATE BAR CODES
OUTPUT TO PRINTER
42
RECORD PACKAGE DATA
SEND INFO TO DATABASE
44
REQUEST PICKUP
CONTACT CARRIER
46
53
GENERATE E-MAIL REQUEST
SCHEDULE TRACKING
SEND E-MAIL INFO TO DATABASE
48
51
SHIPMENT COMPLETE
49

Fig. 2

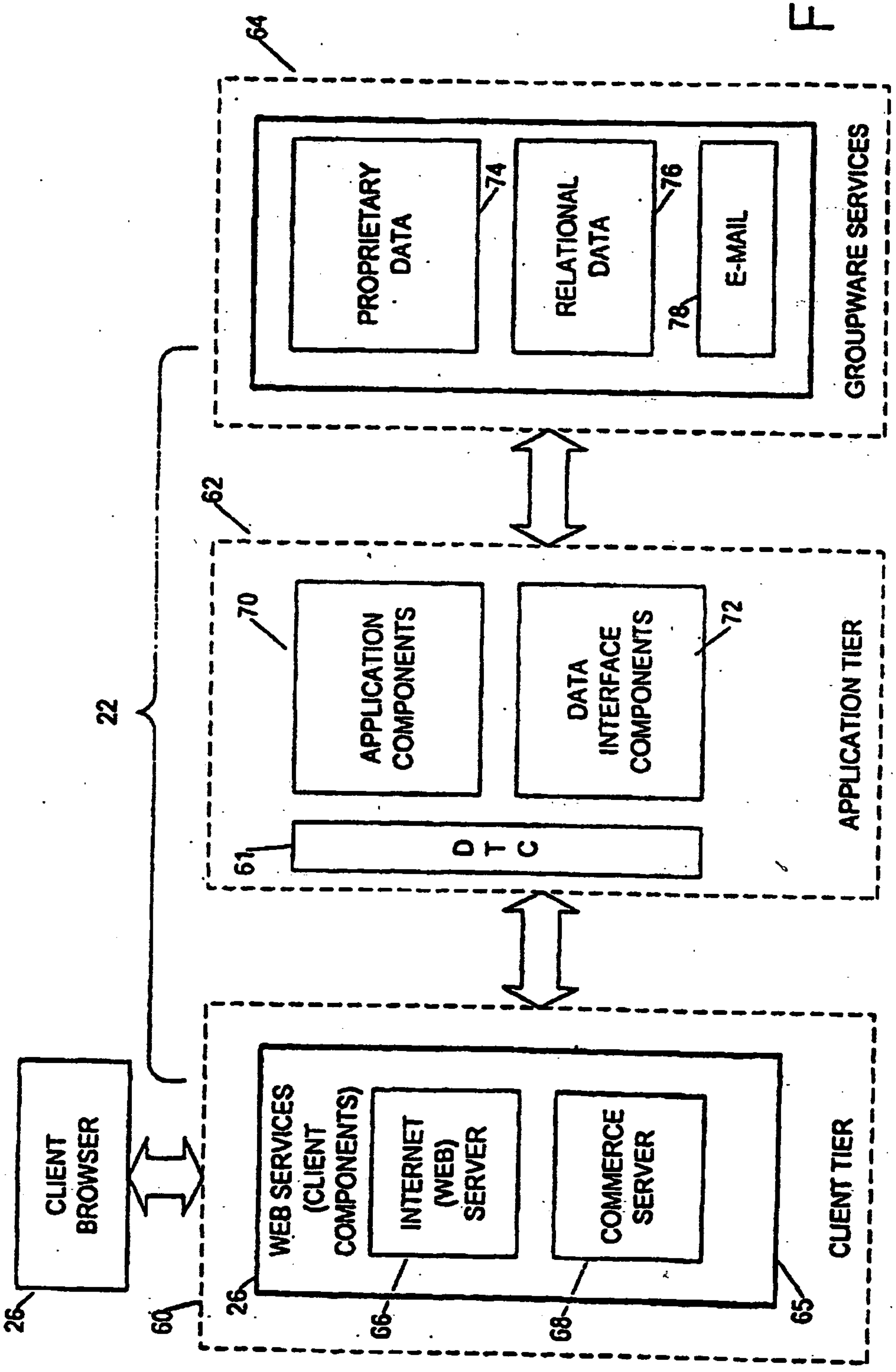

64
PROPRIETARY DATA
74
RELATIONAL DATA
76
78
E-MAIL
GROUPWARE SERVICES
62
70
APPLICATION COMPONENTS
DATA INTERFACE COMPONENTS
72
61
D T C
APPLICATION TIER
22
CLIENT BROWSER
26
60
26
WEB SERVICES (CLIENT COMPONENTS)
INTERNET (WEB) SERVER
66
COMMERCE SERVER
68
65
CLIENT TIER

Fig. 3

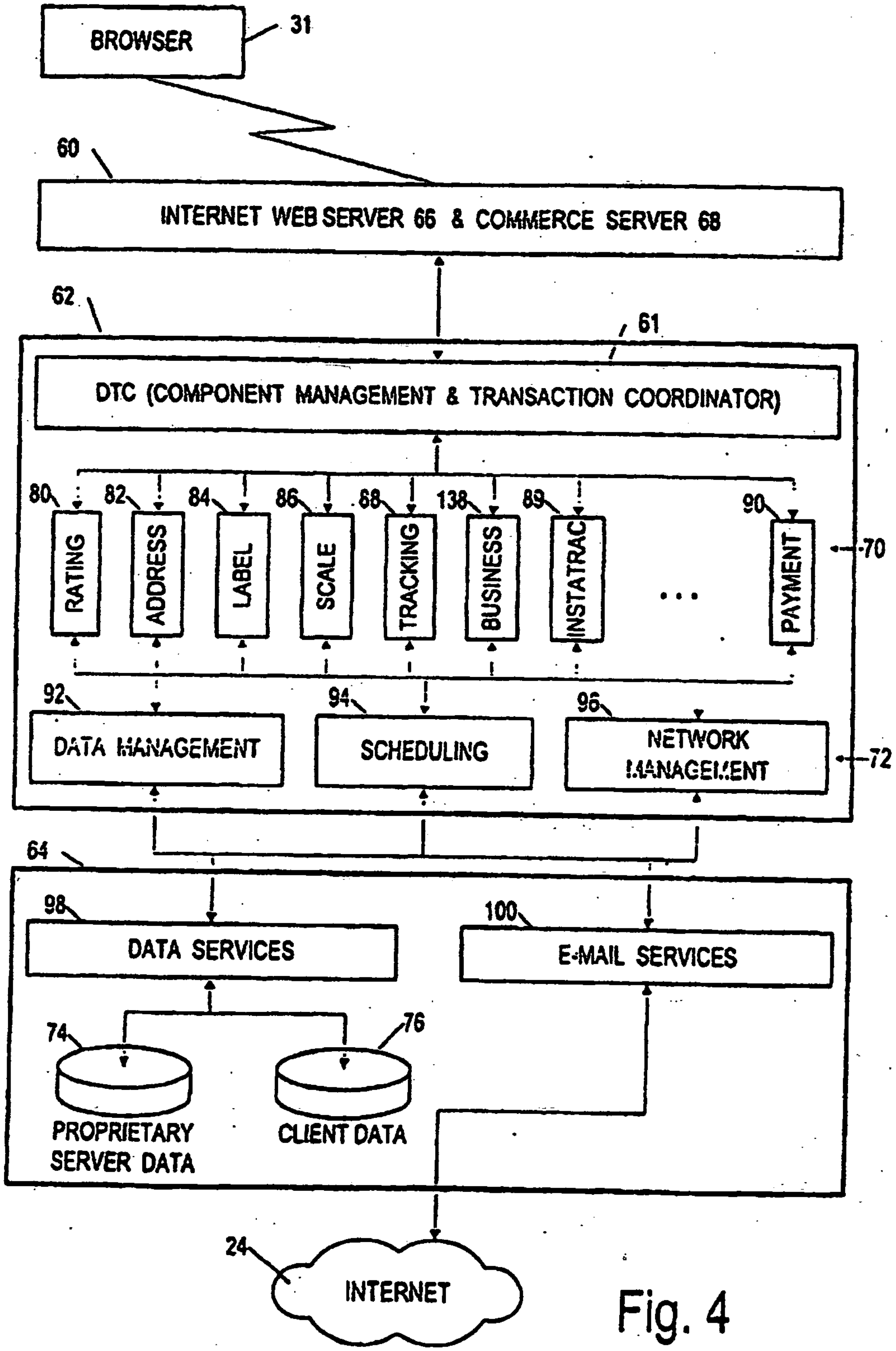

BROWSER
31
60
INTERNET WEB SERVER 66 & COMMERCE SERVER 68
62
61
DTC (COMPONENT MANAGEMENT & TRANSACTION COORDINATOR)
80
82
84
86
88
138
89
90
RATING
ADDRESS
LABEL
SCALE
TRACKING
BUSINESS
INSTATRAC
. . .
PAYMENT
70
92
94
96
DATA MANAGEMENT
SCHEDULING
NETWORK MANAGEMENT
72
64
98
DATA SERVICES
100
E-MAIL SERVICES
74
76
PROPRIETARY SERVER DATA
CLIENT DATA
24
INTERNET

Fig. 4

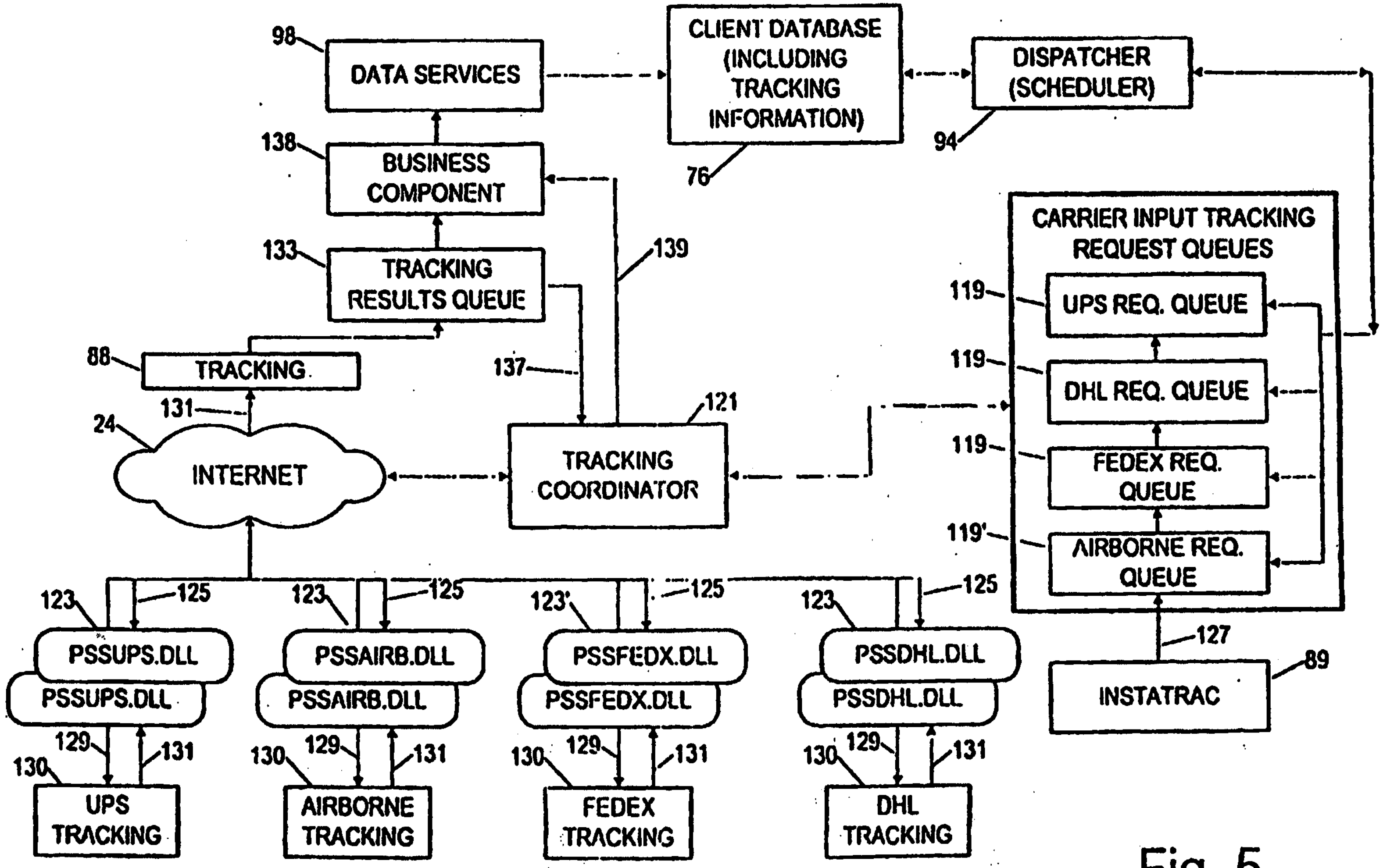

98
DATA SERVICES
CLIENT DATABASE (INCLUDING TRACKING INFORMATION)
76
DISPATCHER (SCHEDULER)
94
138
BUSINESS COMPONENT
139
133
TRACKING RESULTS QUEUE
CARRIER INPUT TRACKING REQUEST QUEUES
119
UPS REQ. QUEUE
119
DHL REQ. QUEUE
119
FEDEX REQ. QUEUE
119'
AIRBORNE REQ. QUEUE
88
TRACKING
137
121
131
24
INTERNET
TRACKING COORDINATOR
123
125
PSSUPS.DLL
PSSUPS.DLL
129
131
130
UPS TRACKING
123
125
PSSAIRB.DLL
PSSAIRB.DLL
130
129
131
AIRBORNE TRACKING
123'
125
PSSFEDX.DLL
PSSFEDX.DLL
130
129
131
FEDEX TRACKING
123
125
PSSDHL.DLL
PSSDHL.DLL
130
129
131
DHL TRACKING
127
89
INSTATRAC

Fig. 5

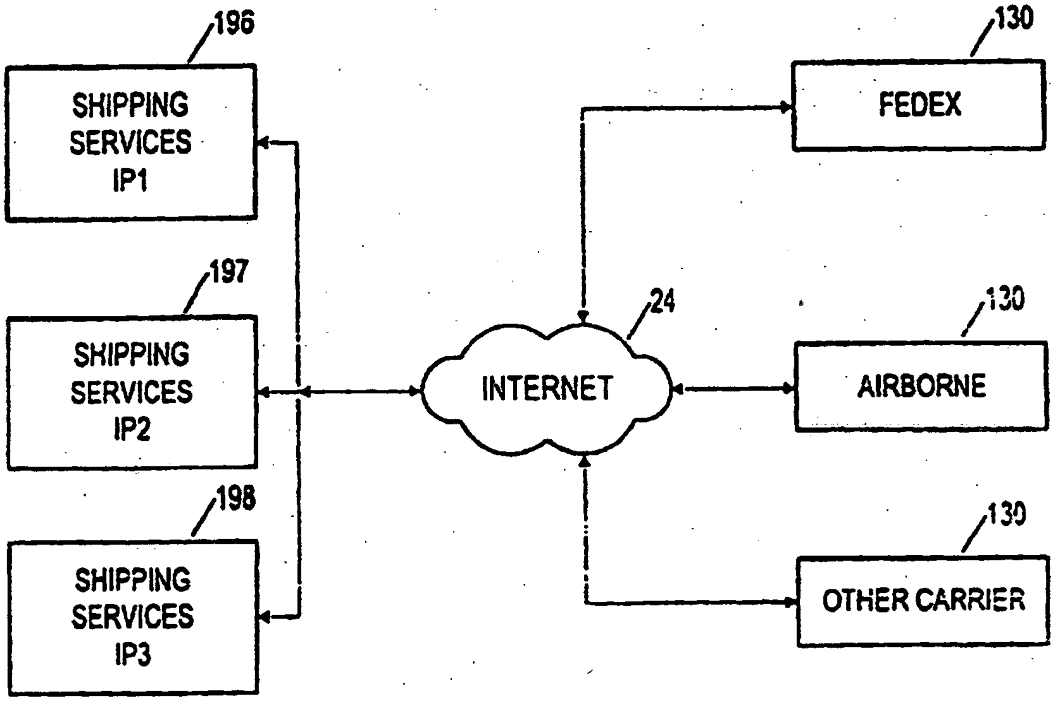

196
SHIPPING SERVICES IP1
197
SHIPPING SERVICES IP2
198
SHIPPING SERVICES IP3
24
INTERNET
130
FEDEX
130
AIRBORNE
130
OTHER CARRIER

Fig. 6

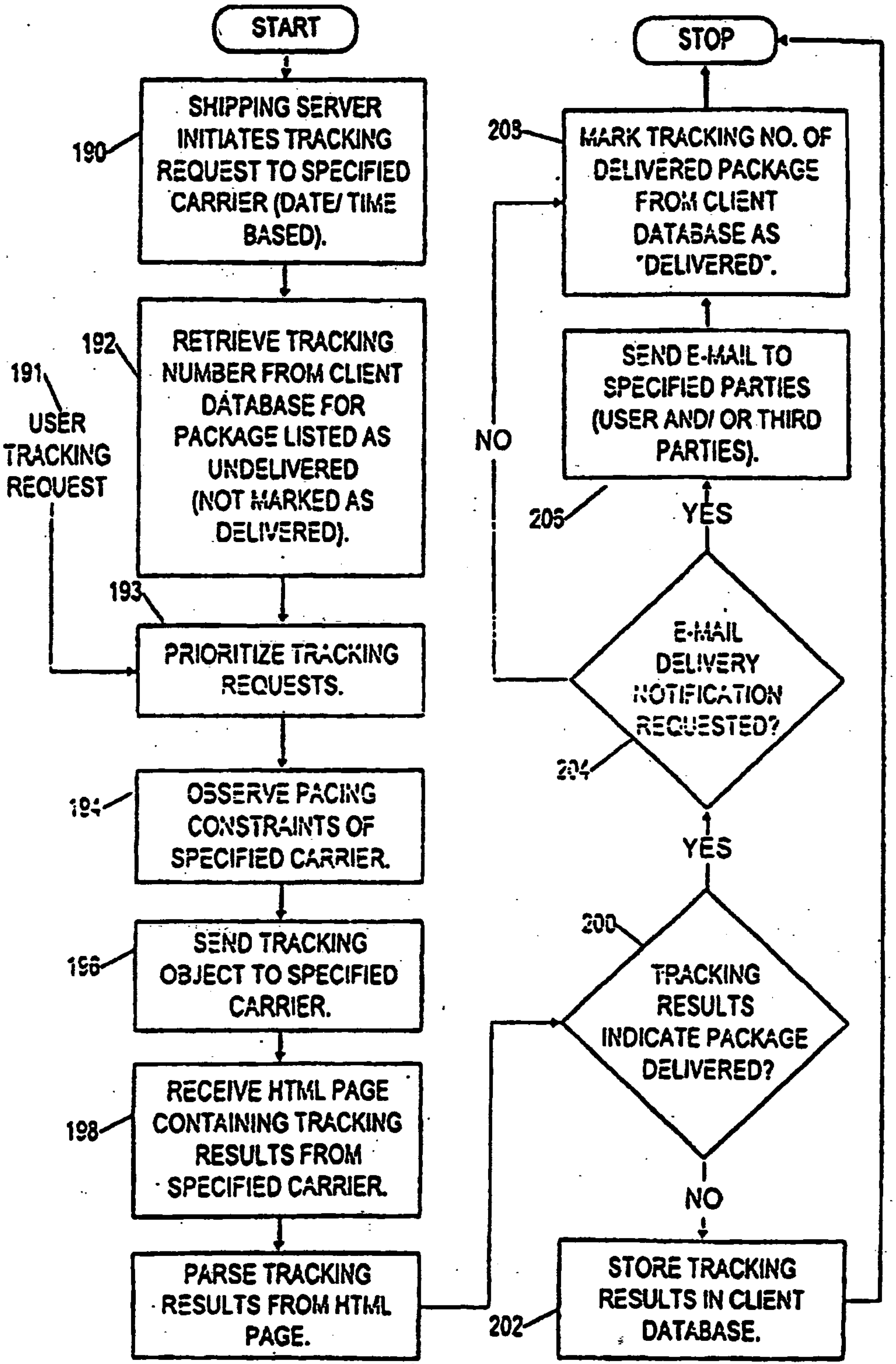

START
190
SHIPPING SERVER INITIATES TRACKING REQUEST TO SPECIFIED CARRIER (DATE/ TIME BASED).
192
191
USER TRACKING REQUEST
RETRIEVE TRACKING NUMBER FROM CLIENT DATABASE FOR PACKAGE LISTED AS UNDELIVERED (NOT MARKED AS DELIVERED).
193
PRIORITIZE TRACKING REQUESTS.
194
OBSERVE PACING CONSTRAINTS OF SPECIFIED CARRIER.
196
SEND TRACKING OBJECT TO SPECIFIED CARRIER.
198
RECEIVE HTML PAGE CONTAINING TRACKING RESULTS FROM SPECIFIED CARRIER.
PARSE TRACKING RESULTS FROM HTML PAGE.
STOP
208
MARK TRACKING NO. OF DELIVERED PACKAGE FROM CLIENT DATABASE AS "DELIVERED".
NO
SEND E-MAIL TO SPECIFIED PARTIES (USER AND/ OR THIRD PARTIES).
206
YES
E-MAIL DELIVERY NOTIFICATION REQUESTED?
204
YES
200
TRACKING RESULTS INDICATE PACKAGE DELIVERED?
NO
202
STORE TRACKING RESULTS IN CLIENT DATABASE.

Fig. 7

METHOD AND SYSTEM FOR MULTI-CARRIER PACKAGE TRACKING

CROSS REFERENCE TO RELATED APPLICATION(S)

Reference is made to U.S. application Ser. No. 09/411,092, filed on even date herewith, entitled, A METHOD AND SYSTEM FOR ESTABLISHING PARCEL SHIPPING VIA THE INTERNET; assigned to the assignee of this application,

Reference is made to U.S. application Ser. No. 09/411,125, filed on even date herewith, entitled, A METHOD AND SYSTEM FOR RESOLUTION OF CARRIER SPECIFIC DATA UTILIZING A GENERIC DATA MODEL, assigned to the assignee of this application. The subject matter of each of these applications is hereby incorporated by reference.

TECHNICAL FIELD

The present invention relates to package tracking, particularly to the tracking of a package enroute from the sender to the recipient, wherein the package may be delivered by one or a plurality of package carriers.

BACKGROUND OF THE INVENTION

In a shipping system such as set forth in co-pending application, U.S. Ser. No. 09/411,092 filed Oct. 4, 1999 entitled, A Method and System for Establishing Parcel Shipping Via The Internet one of the components thereof is the ability to be able to track the location of a package while it is transit from the sender (user of the shipping system) to the recipient. It is desirable to be able to do this tracking regardless of the particular carrier which is actually delivering the package, as well as to be able to provide additional services and features concerning package location and delivery.

SUMMARY OF THE INVENTION

In the package tracking system and method according to the present invention, the user (sender) of a package is able to determine the package's location while enroute to the recipient. In order to achieve this result, the present invention uses network based services and in particular, the Internet to provide the means for transferring tracking information from the carrier responsible for delivery of the package to the party requesting information, typically the sender. In particular, the architecture of the present invention comprises tracking objects which are transferred to the carrier's tracking website in a manner so as to properly request information with regard to an identified package. The shipping system server is responsible for creating the tracking objects, as well as for accessing the selected carrier's tracking website. In particular, the tracking objects are created and their creation and transfer controlled by a tracking coordinator forming part of the shipping system's server. The tracking coordinator performs these tasks through use of registry settings associated with the operating system under which the shipping system server is operating.

The tracking coordinator of the shipping system's server controls these objects by timing the initiation of delivery of the objects to the carrier, as well as the frequency of these deliveries so as to comply with carrier requirements concerning requests for tracking information. The overall result is that tracking of a package is obtainable in a straightforward fashion and in a manner which does not overload the carrier tracking website.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the nature and objects of the present invention, reference is made to the following detailed description taken in conjunction with the following drawings in which:

FIG. 1 is a diagrammatic representation of the shipping system and method which may use the tracking system and method of the present invention.

FIG. 2 is a flow chart of a typical sequence of shipping steps associated with a shipping system and method in which the tracking system of the present invention forms a part thereof.

FIG. 3 is an overall block diagram showing the typical architectural implementation of the shipping system and method of which the tracking system forms a part thereof.

FIG. 4 is a more detailed block diagram of the architecture for the shipping system of which the tracking system of the present invention forms a part thereof.

FIG. 5 is a diagrammatic representation of the tracking system and method, illustrating the multi-threaded implementation of the program execution.

FIG. 6 is a block diagram illustrating the use of multiple Internet Protocol (IP) addresses to increase the number of tracking objects while observing tracking object constraints set by a carrier.

FIG. 7 is a flow chart of the tracking system and method shown in FIG. 5.

DETAILED DESCRIPTION

The tracking system and method of the present invention forms part of an overall shipping system and method as described in copending, U.S. application, Ser. No. 09/411,092 filed Oct. 4, 1999 entitled, A Method and System for Establishing Parcel Shipping Via the Internet (E-907); and U.S. application, Ser. No. 09/411,125 filed Oct. 4, 1999 entitled, A Method and system for Resolution of Carrier Specific Data Utilizing a Generic Data Model (E-909). As best seen in FIG. 1, this overall shipping system **20** comprises a shipping system server **22** and one or more users (senders) **26** which interact with the server by means of the Internet **24**, typically through connection through an Internet service provider **28**. Although a plurality of users at a single location are shown which are interconnected by a local area network **30**, the system also allows other users (e.g. users **26** and **26'**) to access the shipping system via the Internet.

FIG. 2 illustrates the sequence of steps and sub-steps executed in order for a package to be shipped using the shipping system and method. Thus between the begin shipping step **31** and the shipping complete determination step **49**, there can be a number of steps including the determination of the rate associated with sending the package, step **32**, the determination of the address of the recipient, step **34**; the determination of the weight of the package, step **36**; options associated with the package, step **38**, such as a possible insurance sub-step **39**, the recording of payment sequence step **40**; the printing of labels for the package, step **42**; the recording of data associated with the package, record package data sequence step **44**; whether a request for pick-up is made, request pick-up step **46**; and the generation of E-mail requests including requests regarding the scheduling of tracking and the like, step **48** and sub-steps **51** for schedule tracking and the sending of e-mail information to the system service database, sub-step **53**.

In order to implement these sequence of steps, the shipping system and method uses a multi-tier architecture such as shown in FIGS. 3 and 4. The tracking component 88 and InstaTrac component 89 are best illustrated in FIG. 5 with respect to their operations. FIG. 5 is a diagrammatic representation of the tracking system (comprising components 88, 89, 98 and 138). In operation, a user 26 desiring tracking information makes such a request over the Internet to the shipping system server 22 (FIG. 1). This shipping server operates so as to generate a tracking object which is a component object model (COM) created by the InstaTrac component 89. The task of this tracking object is to initiate an Internet request to the selected carrier's tracking website 130, where each carrier has its own tracking component associated with its web based services. The shipping system server tracking component 88 controls sending tracking object the designated carrier tracking website. In order to do this, the tracking number created at the time that the package was shipped (see FIG. 2 for sub-step 41) is used to identify the package to the corresponding carrier tracking website 130. The creation of these tracking objects must be paced since various carriers restrict the number of tracking objects that can be sent to the carrier tracking website. For example, a particular carrier tracking website may restrict the number of requests from a particular Internet Protocol (IP) address to one request every ten seconds. Thus, if the carrier sees tracking objects more frequently than one every ten seconds, it may interpret the tracking objects as an attack on the tracking website, resulting in lockout of the IP address.

In addition, other carriers may permit only a fixed number of tracking objects within a specified period of time, without regard to the frequency of such requests. It is thus the obligation of the shipping server tracking coordinator 121 to ensure that tracking objects are controlled with respect to the frequency of their generation in view of the requirements of each of the carrier tracking websites. As seen in FIG. 5, this is accomplished by the tracking coordinator 121. The tracking coordinator generates tracking objects 123 for delivery over the Internet 24 to the associated carrier tracking website 130. As seen in FIG. 5, tracking objects are designated by the tracking coordinator 121 for each carrier in which tracking information is desired. The tracking coordinator obtains information for these tracking objects from corresponding carrier input tracking request queue 119. For each tracking object within a tracking request queue, the tracking coordinator obtains that request through an associated programming thread since the tracking coordinator operates in a multi-threaded manner.

Depending upon the pacing constraints set by the carrier, multiple threads for generating multiple tracking objects are generated. Thus for instance as shown in FIG. 5 for tracking objects to be sent to the Airborne tracking website 130, multiple Airborne tracking objects 123' can be generated. In this example, Airborne may have a constraint that no more than five tracking objects can be generated within a predetermined length of time and these tracking objects all would be then generated (assuming that at least that number of tracking requests are in the Airborne tracking request queue 119') by the tracking coordinator on individual software threads 125. Similarly, the tracking coordinator generates tracking objects via individual threads for each of the carriers supported by the shipping system server, which in the example shown in FIG. 5 comprises four carriers; namely, Airborne, UPS, FedEx and DHL.

As also seen in FIG. 5, a user of the shipping system can request an instant track regarding a package for which the tracking number is known by the user. This is shown by InstaTrac component 89 which is executed by the shipping server (see FIG. 1) and which is conveyed to the appropriate carrier input tracking request queue 119 as shown by line 127. Such a tracking request from a user will generally take priority over other tracking requests that are periodically received from the tracking component 88 and which are generated in an automatic fashion by the shipping server so as to maintain tracking information for all of the packages handled by the shipping server. This prioritization is accomplished by placing the InstaTrac request at the top of the associated queue 119.

The tracking objects as discussed above are conveyed to the corresponding carrier tracking website 130 via the Internet 24 as shown by arrows 129. The carrier tracking website 130 then processes each tracking request from the tracking object and generates a tracking response which is conveyed as an HTML page 131. The HTML page contains the tracking status and is transferred via the Internet 24 to the tracking component 88. The tracking component then parses the HTML and extracts the tracking request results. The results are then sent to the tracking results queue 133. The tracking coordinator via path 137 senses if tracking results data is in the tracking result queue. If data is sensed, the tracking coordinator via path 139 causes the business component 138 to receive the data from the tracking results queue. This component is used to update the data services module 98 in the groupware services tier 64 (see FIG. 4) so as to convey the updated tracking information to the proprietary database 74. Tracking coordinator 121 controls the business component 138 via control line 139.

Thus an important aspect of the tracking coordinator is its multi-threaded executable architecture which allows for simultaneous generation of tracking objects for various carriers, all within the pacing constraints associated with the individual carriers. Thus the tracking coordinator operates as a multi-threaded service. It accepts commands from the scheduling component 94 which is used to initiate the autonomous or automatic generation of tracking requests for maintaining updated tracking information concerning outstanding packages.

Details of the Tracking Coordinator:

The tracking coordinator 121 gathers its inputs from the carrier input tracking request queues 119. Each carrier is seen to have a corresponding queue. The names of each input queue is stored in the operating system Registry, along with other carrier information. For each carrier found within the Registry a thread 127 is generated. This thread monitors the corresponding carrier input queue for incoming messages.

The tracking request messages stored in the input queues 119 are deposited by the scheduling module 94 (see FIG. 4) or by the InstaTrac module 89.

The InstaTrac module creates a tracking request from an ASP request and then to the associated carrier input queue 119 as shown by arrow 127. Such an InstaTrac tracking request contains a record set and the tracking coordinator extracts the tracking request from the queue as soon as it is placed there, thereby prioritizing the InstaTrac tracking request. The tracking coordinator then extracts the record set to from the tracking request and invokes an outgoing tracking object thread 125 that activates the corresponding carrier's tracking component at the carrier's tracking website 130. The tracking coordinator sends several parameters to the carrier's tracking component, one of which is the record set that contains information pertinent to the particular tracking request, regardless of the origin of the tracking request.

The record set in general may contain one or more records. If the record set contains a single record, the tracking coordinator invokes a single tracking object and provides the record set as a parameter of that object. This mode of operation is called the "same mode". If however the tracking request contains a record set with many records, referred to a "mixed mode", the tracking coordinator separates the record set and dispenses the individual records as individual tracking objects. The individual tracking objects are then distributed in a timely manner in order to meet the specified pacing requirements of the associated carrier.

The tracking coordinator only creates tracking object threads if it is allowed to place another tracking object within a specified time period. This time frame information which is keyed to the individual carrier is again stored in the operating system Registry. Thus for instance, if the carrier's tracking website only allows for a particular IP address to send two requests in a one minute time interval, this information is stored in the Registry. Then when the tracking coordinator generates tracking objects, it obeys this constraint by invoking threads only within that time constraint. In this manner, the carrier's tracking website does not deny access by these tracking objects since they are generated at a pace which is within the constraint set by that carrier.

As also seen in FIG. **5**, the tracking coordinator via control line **139** launches the business component software module. This component, as explained earlier, invokes the data services module **98** which is responsible for updating the tracking information stored within the client (user) database **76**.

Since the tracking coordinator operates as a Microsoft Windows NT service, it is started from a service control program. The service's icon within the control panel is an SCP that can manipulate the states of a service.

Once the service installs into the Registry (HKEY_LOCAL_MACHINE\YSTEM|CurrentControlSet\Services) it is manipulated via a SCP. Preferably this service has its startup mode set to automatic. This allow the tracking coordinator to start upon system startup, thus providing continuous service. Table 1 provides the commands for Registry installation and removal of the service.

TABLE 1

tracking coordinator - install	Installs the service into the Registry.
tracking coordinator - remove	Removes the service from the Registry.

This service supports the Start, Stop, Pause and Continue commands.

Start

Begins the carrier threads.

Stop

stops all carrier threads and waits for any tracking component threads to exit before stopping the service. This command may take up to 30 seconds to complete if there are several tracking component threads still running.

Pause

This command suspends all carrier threads currently running.

Continue

This command resumes any carrier threads that may have been suspended due to a Pause command.

System Requirements

The tracking coordinator needs to access the carrier input queues **119**. These queues are made available on the same domain. Further, in order to access any of the queues their names are made available through the Registry.

Compiler & Linker Requirements

This component is created with Visual Studio C++6.0.

In order to debug this component it is sometimes necessary to not run it as a service. The command of tracking coordinator—debug can be used to run the tracking coordinator from a Command Prompt window. In this mode the component runs without any interaction from the SCM.

Error Logging

All error and informational messages are written to the NT system application event log.

Registration Details

The following registry entries must be provided. Failure to furnish any one of the key or string values results in the service not being able to start. The failure is logged to the Systems Event View, Application Log.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\PitneyBowes\PSS]
"MSMQServer"="Glenserver\\"
"ResultsQ"="trackingresultsq"
```

Each carrier that is monitored must have the following entry with the corresponding string values.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\PitneyBowes\PSS\Carriers]
[HKEY_LOCAL_MACHINE\SOFTWARE\PitneyBowes\PSS\Carriers\49]
"Trac_URL"="208.243.33. 1 79/tracktest/default.asp"
"RequestQ"="upsrequestq"
"ObjectsPerTimeFrame"="2"
"RecordsSetMode"="Same"
"RecsPerRecSet"="50"
"Symbol"="UPS"
"TimeFrameUnits"="min"
"Token"="49"
```

Registry String Value Definitions

Registry string values as set forth in Table 2.

TABLE 2

MSMQServer: This is the name of the server where the tracking queues exist.

ResultsQ: Name of the queue that a tracking component dumps its results.

Trac_URL: The URL that the tracking component hits.

RequestQ: Name of the carrier input queue 119 that the tracking coordinator extracts requests.

ObjectsPerTimeFrame: This is the number of tracking components that the tracking coordinator allows per time frame (i.e. minutes or hour).

RecordSetMode: Each message that is placed on a carrier queue contains a record set. A record set may contain one or many records. If the value of this string value is "Same", the record set contains only one record. If the value is "Mix", the record set can contain many records.

RecsPerRecSet: Maximum number of records a message's record set can contain.

Symbol: The carrier's symbol. This symbol is used to form the tracking component's OLEProgID (i.e. PSSUPS.ParseUPS).

TimeFrameUnits: The time frame that a specified number of Tracking Components can be invoked (i.e. minutes or hour).

Token: The carrier's token.

FIG. **7** represents a flow chart of the steps taken by the shipping server to determine whether a package has been delivered by a carrier to the intended recipient. Step **190** shows that the shipping server initiates a tracking request to a specified carrier, depending upon date and time constraints. Thus a specified carrier such as United Parcel Service may only have guaranteed delivery at a specified time in the morning and a specified time in the afternoon. In order to make the request for tracking information efficient, it is therefore contemplated that tracking requests be made after these guaranteed times are exceeded. Thus for instance, if morning delivery has a guaranteed time of ten thirty A.M., a tracking request (via a tracking object) to UPS may be made at eleven A.M. to determine which packages have in fact been delivered within the ten thirty time constraint. Similarly, another request could be made after four thirty P.M. if afternoon guaranteed delivery is to be made by that time. Of course, different carriers can have different constraints, both with regard to guaranteed time of delivery as well as whether deliveries are guaranteed on non-business days such as Saturdays and Sundays.

Step **192** shows that the next step performed is retrieving tracking numbers from the client database **76** (see FIG. **4**) for packages that are being shipped by the specified carrier and which are not marked as delivered. Step **194** shows that the tracking coordinator **121** observes pacing constraints set by the specified carrier. Thus, for instance, a specified carrier may demand that no more than a given number of tracking objects be made from a particular Internet protocol (IP address), such as the IP address of the shipping server within a given period of time. This might be limited to ten tracking objects per minute or no more than a hundred tracking objects in a thirty minute period, regardless of how many are presented in any time interval within that thirty minute period. In order to partially overcome the constraints of the specified carrier, the tracking coordinator can initiate tracking objects from a plurality of server sites such as shown in FIG. **6**, wherein each server site **196**, **197**, **198** has an associated unique IP address. In so doing, the carrier tracking website **130** will not interpret these additional tracking objects as an attack on the website since the tracking objects are emanating from unique IP addresses. FIG. **6** therefore shows multiple server sites **196**, **197** and **198** so as to generate tracking objects from three unique IP addresses.

Referring again to FIG. **7**, the tracking objects are then sent by the shipping server from one or more IP addresses to the specified carrier tracking website. At Step **198**, the carrier tracking website has processed the tracking object and has created an HTML page that contains the tracking results for the package. These tracking results typically indicate if the package has been delivered to the recipient, and if so, the date and time of delivery. These results also typically show the dates, times and places the package has traversed in its path toward the recipient.

At step **199**, the carrier's tracking results HTML page is parsed by the tracking component. This is typically performed by "scraping" the HTML page, thereby extracting the relevant tracking information.

Decisional step **200** then determines whether the tracking results indicate that the package has been delivered to the recipient. If the package is still enroute, the tracking results are stored in database **76**, but the tracking number is not marked as "DELIVERED" (Step **202**). This tracking number therefore is available for subsequent rescheduling to the appropriate input tracking request queue **119**.

If the tracking results indicate that the package has been delivered, then that information is used to show that the package has in fact been delivered with that response then being used to invoke decisional step **204** which determines if E-mail delivery notification has been requested by the user. If an E-mail request has been made by the user, then the shipping server initiates the E-mail services **100** (see FIG. **4**) and sends an E-mail notification to the parties specified by the user. One such party may of course be the user. This operation is shown by Step **206**. The tracking results are also stored in the database **76** by marking the package record as "DELIVERED". This information can then be used for report purposes. This is shown by Step **208**.

It is therefore seen that the automatic generation of tracking requests for undelivered packages allows the shipping server to maintain information in its database concerning the whereabouts of undelivered packages, as well as being the triggering mechanism when delivery of a package is determined, for sending E-mail notification to the sender or other designated parties. This greatly facilities the usefulness of the shipping server methodology since it augments the usefulness of the information which otherwise would have to be manually requested by the user concerning the status of a undelivered package.

In this regard, reference should again be made to FIG. **7**, wherein it shows that if a user tracking request (event **191**) has been made by the user (InstaTrac component **89**), then that information is presented to step **193** for prioritizing the tracking requests prior to submission of those requests to the pacing step for the tracking request at step **194**. This prioritization is actually performed by putting the user generated tracking request at the head of the input tracking queue of the designated carrier. In this way, the tracking request which otherwise would have been sent to the specified carrier, can allow for a prioritized request to be made by the user which otherwise might have to wait for a substantial period of time before presentation to the carrier. These functions are performed by the tracking coordinator **121**.

What is claimed is:

1. A tracking system in which a package is to be sent from a user to a recipient by requesting shipping through Internet resources associated with carriers capable of delivering the package to the recipient, in which the user determines the carrier to be used for shipping a package to a particular recipient, comprising:

means for generating a tracking number, the tracking number being associated with a package to be sent from the user to the recipient by a selected carrier;

means for generating a tracking request, the tracking request containing the tracking number associated with the package, as well as information of the selected carrier which is to deliver the package to the particular recipient;

a storage location adapted to store the tracking request;

a tracking coordinator adapted to receive said tracking request and adapted to generate tracking objects,

and adapted to send said tracking objects to a tracking website of the selected carrier;

means for receiving results from the tracking website of the selected carrier;

means for updating shipping server data storage with the results from the tracking website of the selected carrier website; and

wherein the tracking coordinator comprises means for limiting the generation of tracking objects for the selected carrier based on pacing constraints provided by the selected carrier so as to be generated no more frequently than a carrier designated number of tracking objects per carrier designated interval.

2. A tracking system for a shipping system as defined in claim 1, further comprising a tracking result queue for receiving the results from selected carrier websites and for outputting these results for delivery to a shipping system server data storage device.

3. A tracking system for a shipping system as defined in claim 2, wherein the shipping system server has an instant tracking component for allowing a user to generate a tracking request for a package, wherein the tracking coordinator has means for generating a tracking object for the user tracking request that is prioritized with respect to other tracking objects generated for the same carrier as that associated with the users package.

4. A tracking system for a shipping system as defined in claim 3, wherein the tracking coordinator has means for generating tracking objects to a carrier tracking website using multiple Internet Protocol addresses.

5. A tracking system for a shipping system as defined in claim 3, wherein the shipping system server includes a scheduler for automatically retrieving information required to generate a tracking request from the data storage device, wherein the scheduler times said retrieval of information to occur at a predetermined time.

6. A tracking system for a shipping system as defined in claim 1, wherein the shipping system server has an instant tracking component for allowing a user to generate a tracking request for a package, wherein the tracking coordinator has means for generating a tracking object for the user tracking request that is prioritized with respect to other tracking objects generated for the same carrier as that associated with the user's package.

7. A tracking system as defined in claim 1, further comprising an E-mail services component for generating an E-mail message to a party specified by the user when the tracking information indicates that the package has been delivered to the recipient.

8. A tracking method for a shipping system in which a package is to be sent from a user to a recipient by requesting said shipping through Internet resources associated with carriers capable of delivering the package to the recipient, in which the user of the shipping system determines the carrier to be used for shipping a package to a recipient, and in which the shipping system has a shipping system server with a data storage device for storing package tracking data, comprising the steps of:

(a) generating a tracking number associated with the package to be sent from the user to the recipient by a selected carrier;

(b) generating a tracking request containing the tracking number associated with the package, as well as information of the selected carrier which is to deliver the package to the particular recipient;

(c) storing the tracking request;

(d) generating tracking objects, and sending said tracking objects to a tracking website of the selected carrier;

(e) receiving results from the tracking website of the selected carrier;

(f) updating shipping server data storage with the results from the tracking website of the selected carrier website; and

(g) limiting the generation of tracking objects for the selected carrier based on pacing constraints provided by the selected carrier so as to be generated no more frequently than a carrier designated number of tracking objects per carrier designated interval.

9. A tracking method as defined in claim 8, further comprising the step of receiving the results from all of the carrier websites and for outputting these results for delivery to the shipping system server data storage device.

10. A tracking method as defined in claim 9, further comprising the steps of allowing a user to generate an instant tracking request for a package, and for generating a tracking object for the user tracking request that is prioritized with respect to other tracking objects generated for the same carrier as that associated with the user's package.

11. A tracking method as defined in claim 10, further comprising the step of generating tracking objects to a carrier tracking website using multiple Internet Protocol addresses.

12. A tracking method as defined in claim 10, further comprising the step of automatically scheduling retrieving information required to generate a tracking request from the data storage device at a predetermined time.

13. A tracking method as defined in claim 8, wherein the shipping system server has an instant tracking component for allowing a user to generate a tracking request for a package, wherein the tracking coordinator has means for generating a tracking object for the user tracking request that is prioritized with respect to other tracking objects generated for the same carrier as that associated with the user's package.

14. A tracking method as defined in claim 13, further comprising the step of generating tracking objects to a carrier tracking website using multiple Internet Protocol addresses.

15. A tracking method as defined in claim 8, further comprising the step of automatically scheduling retrieving information required to generate a tracking request from the data storage device at a predetermined time.

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Dutta et al.

(10) **Patent No.:** **US 6,433,732 B1**
(45) **Date of Patent:** **Aug. 13, 2002**

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(54) **PACKAGE TRACKING SYSTEM**

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(73) Assignee: **International Business Machines Corporation**, Armonk, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(51) **Int. Cl.**^{7} **G01S 5/02**; H04B 7/185

(52) **U.S. Cl.** **342/357.07**

(58) **Field of Search** 342/357.07, 357.09, 342/357.13, 451, 457; 455/456, 457; 235/375, 384, 385; 705/28, 26, 27, 29

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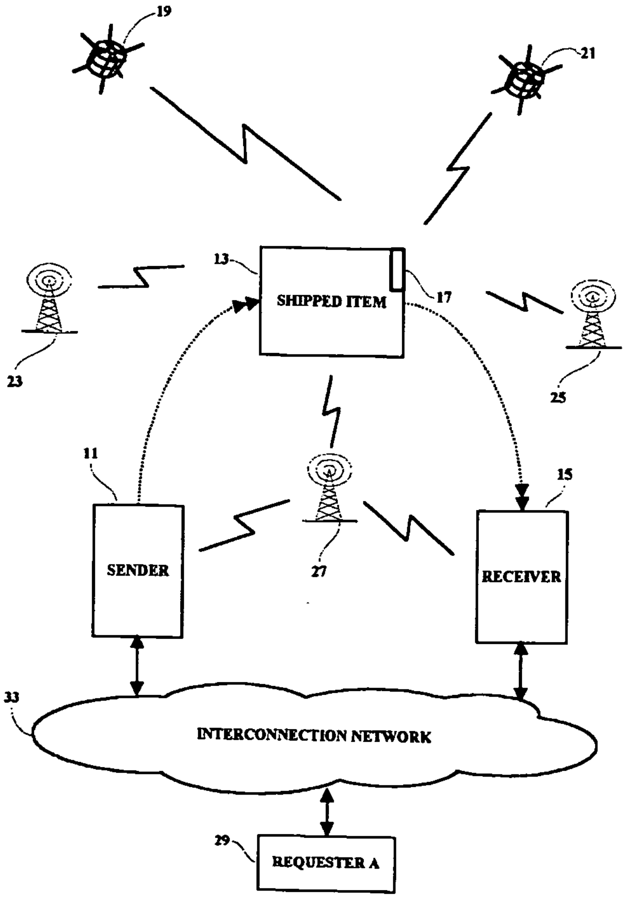
Assistant Examiner—Fred H Mull
(74) *Attorney, Agent, or Firm*—Robert V. Wilder; Leslie A. Van Leeuwen

(57) **ABSTRACT**

A method and implementing system are provided in which the packaging for an item being shipped includes an item locator device for locating the item during shipment. The locator device is able to determine the location of the item being shipped through a Global Positioning System (GPS) or through another location-determining system such as a wireless telephone network. In an example, a sender maintains a database at the sender's server containing information concerning each shipping transaction. A requester is enabled to log-on to a sender's website and access the database to determine the last location and time of query for the item being shipped. The requester may access the sender's database directly for the requested location information or initiate a call from the sender to the item being shipped to update the sender's database at the time of the call. In another embodiment, a requester is able to call the item locator device directly for the location information.

24 Claims, 6 Drawing Sheets



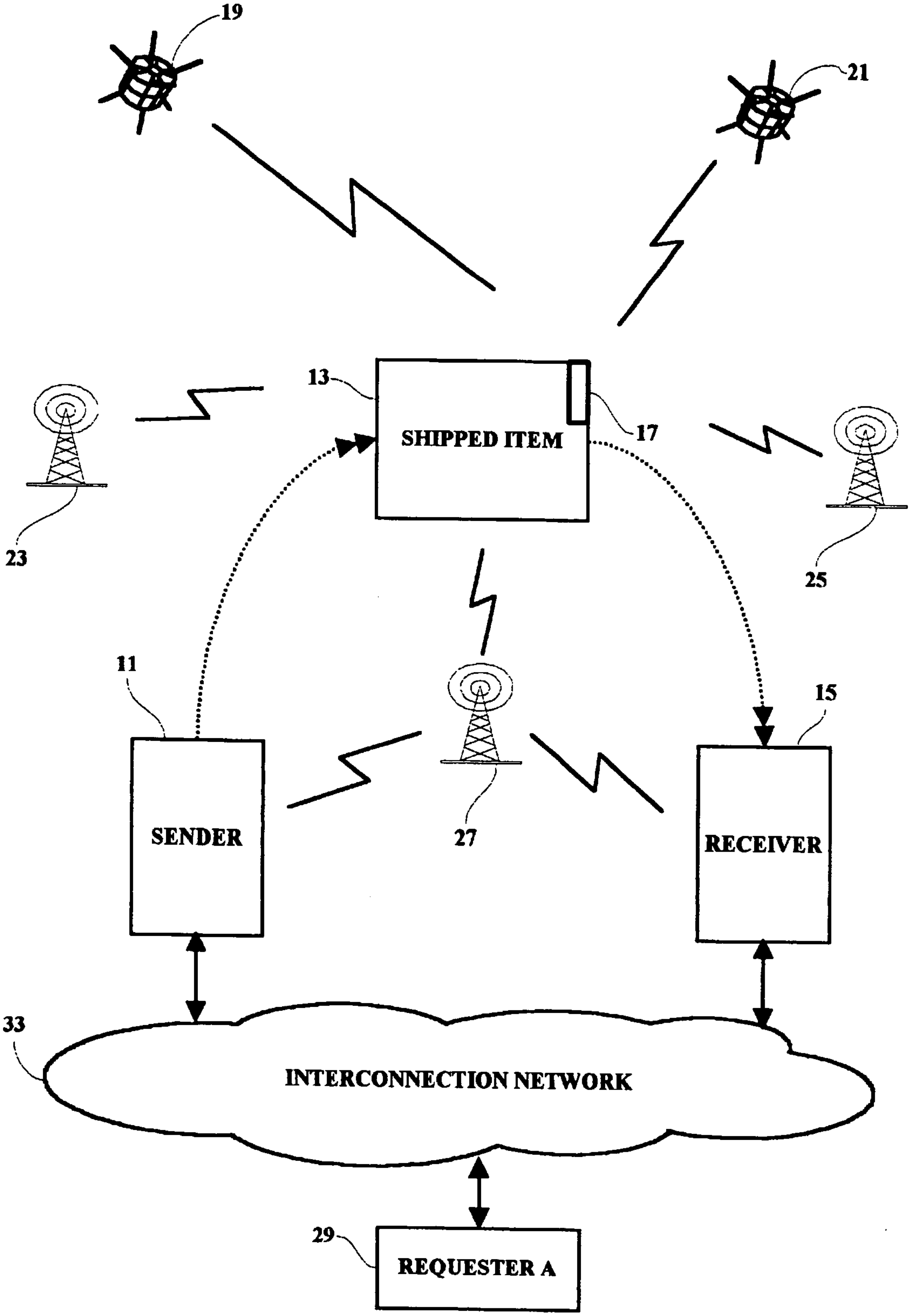

SHIPPED ITEM
SENDER
RECEIVER
INTERCONNECTION NETWORK
REQUESTER A

FIG. 1

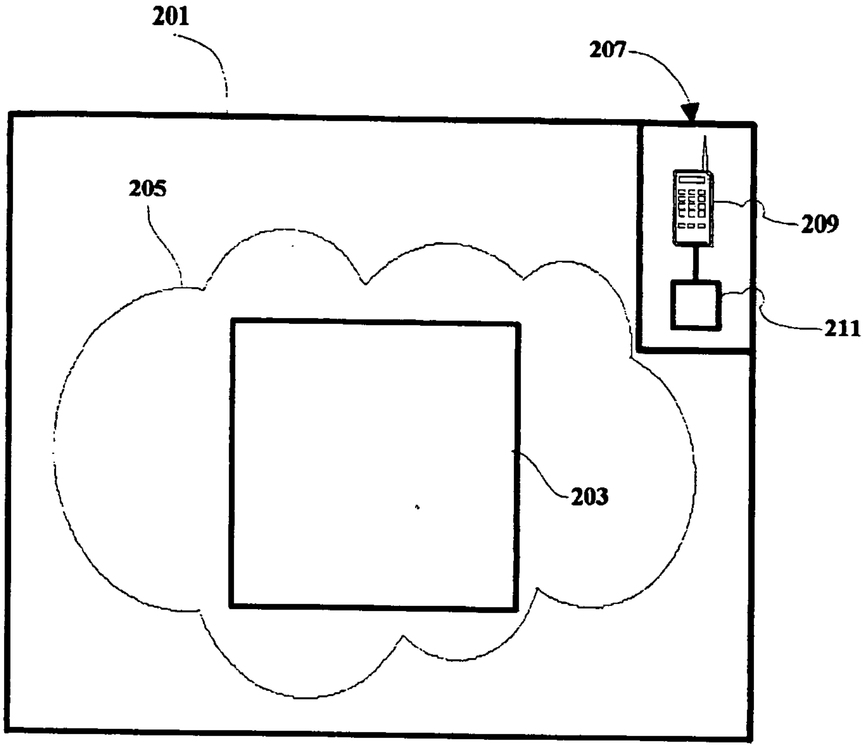
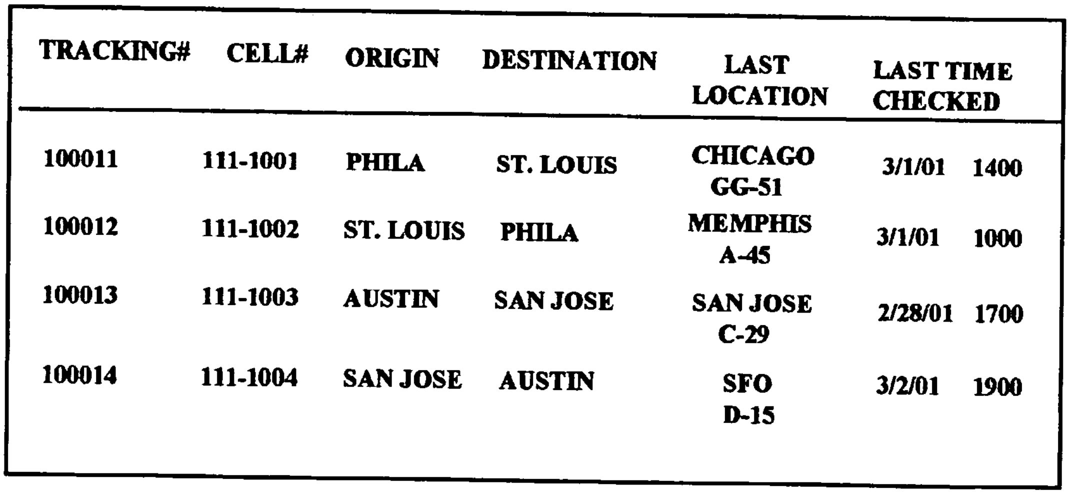


FIG. 2



TRACKING#	CELL#	ORIGIN	DESTINATION	LAST LOCATION	LAST TIME CHECKED
100011	111-1001	PHILA	ST. LOUIS	CHICAGO GG-51	3/1/01 1400
100012	111-1002	ST. LOUIS	PHILA	MEMPHIS A-45	3/1/01 1000
100013	111-1003	AUSTIN	SAN JOSE	SAN JOSE C-29	2/28/01 1700
100014	111-1004	SAN JOSE	AUSTIN	SFO D-15	3/2/01 1900

FIG. 3

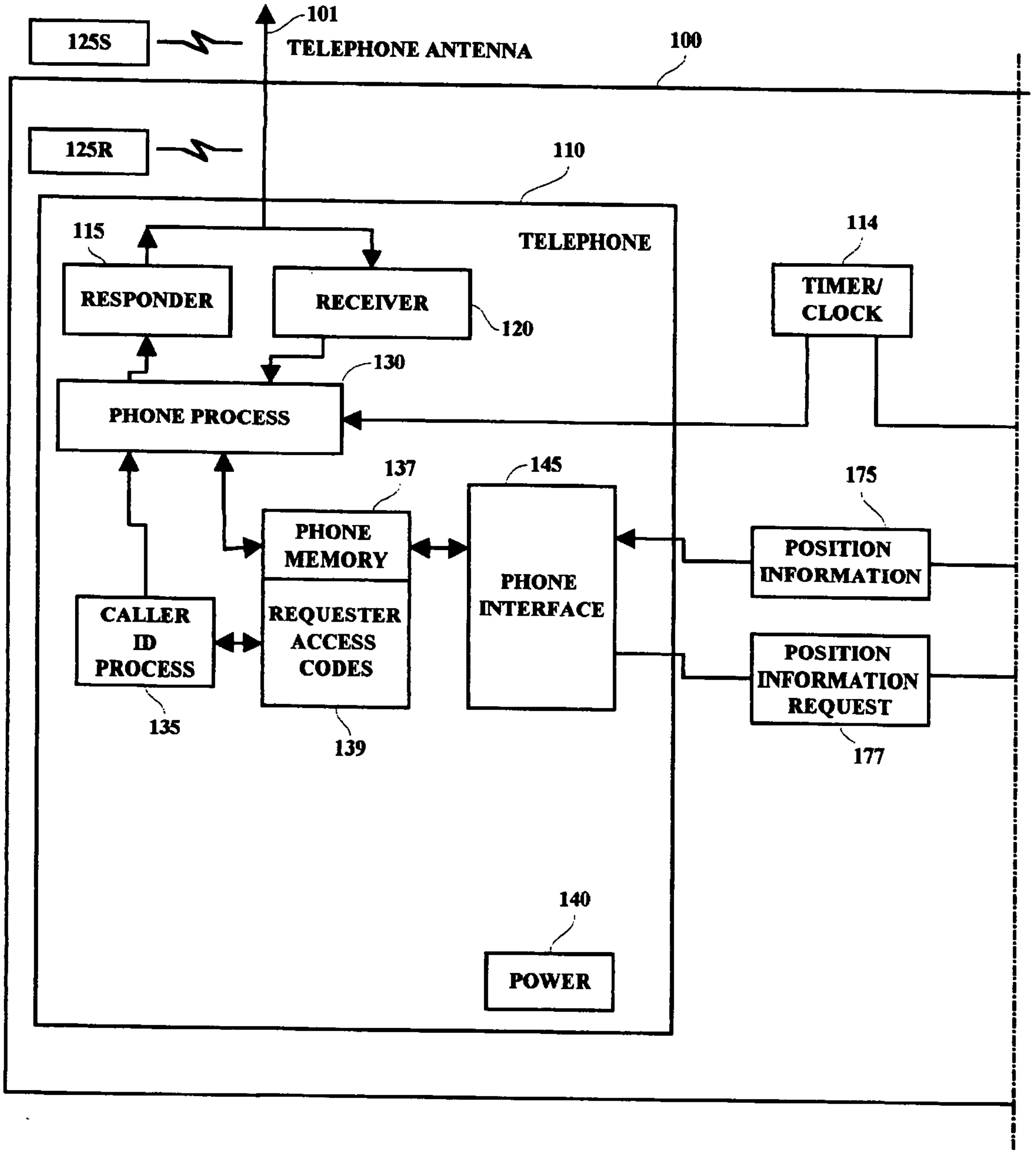

125S
101
TELEPHONE ANTENNA
100
125R
110
115
TELEPHONE
114
RESPONDER
RECEIVER
120
TIMER/ CLOCK
130
PHONE PROCESS
137
145
175
PHONE MEMORY
POSITION INFORMATION
PHONE INTERFACE
CALLER ID PROCESS
REQUESTER ACCESS CODES
POSITION INFORMATION REQUEST
135
139
177
140
POWER

FIG. 4

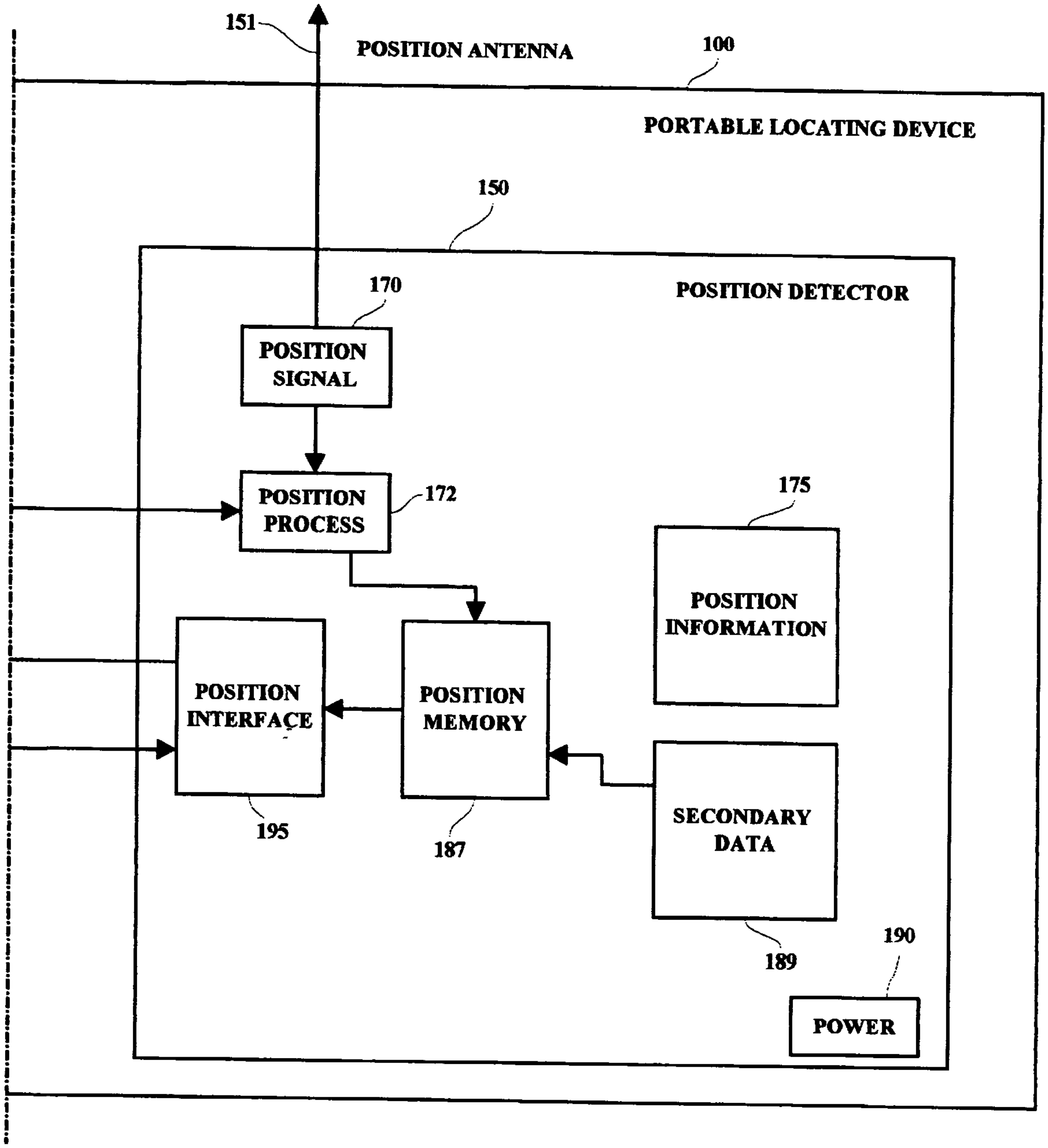

151
POSITION ANTENNA
100
PORTABLE LOCATING DEVICE
150
POSITION DETECTOR
170
POSITION SIGNAL
POSITION PROCESS
172
175
POSITION INFORMATION
POSITION INTERFACE
POSITION MEMORY
SECONDARY DATA
195
187
189
190
POWER

FIG. 5

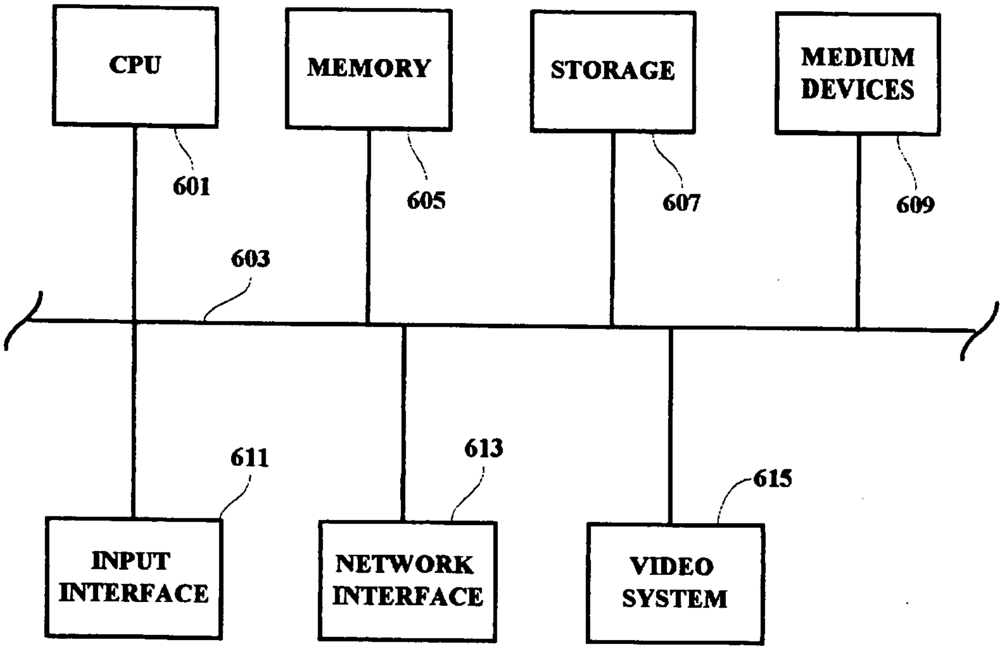

CPU
MEMORY
STORAGE
MEDIUM DEVICES
601
605
607
609
603
611
613
615
INPUT INTERFACE
NETWORK INTERFACE
VIDEO SYSTEM

FIG. 6

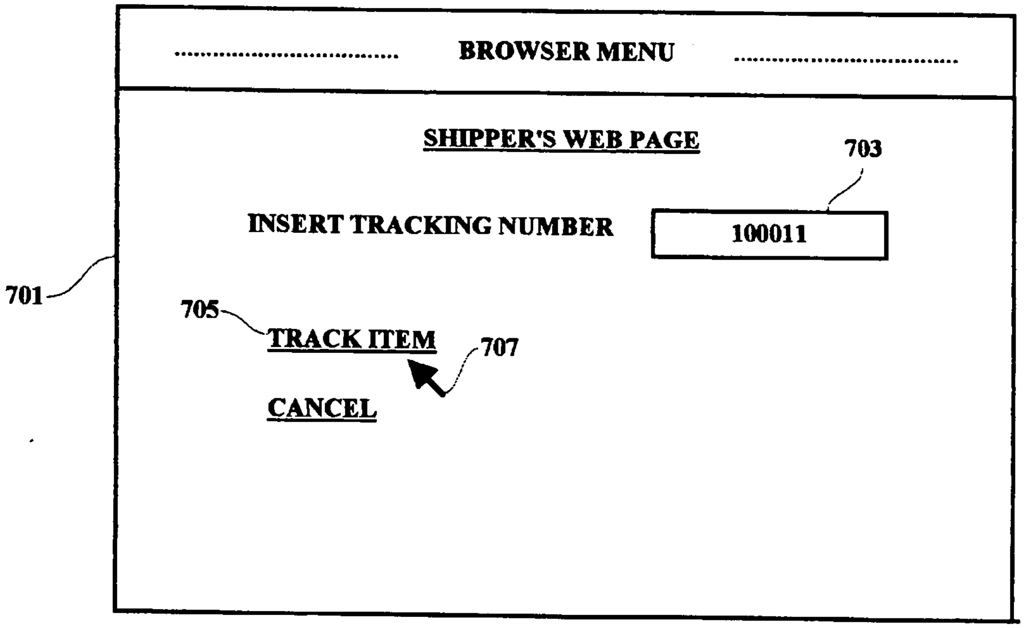

BROWSER MENU
SHIPPER'S WEB PAGE
703
INSERT TRACKING NUMBER
100011
701
705
TRACK ITEM
707
CANCEL

FIG. 7

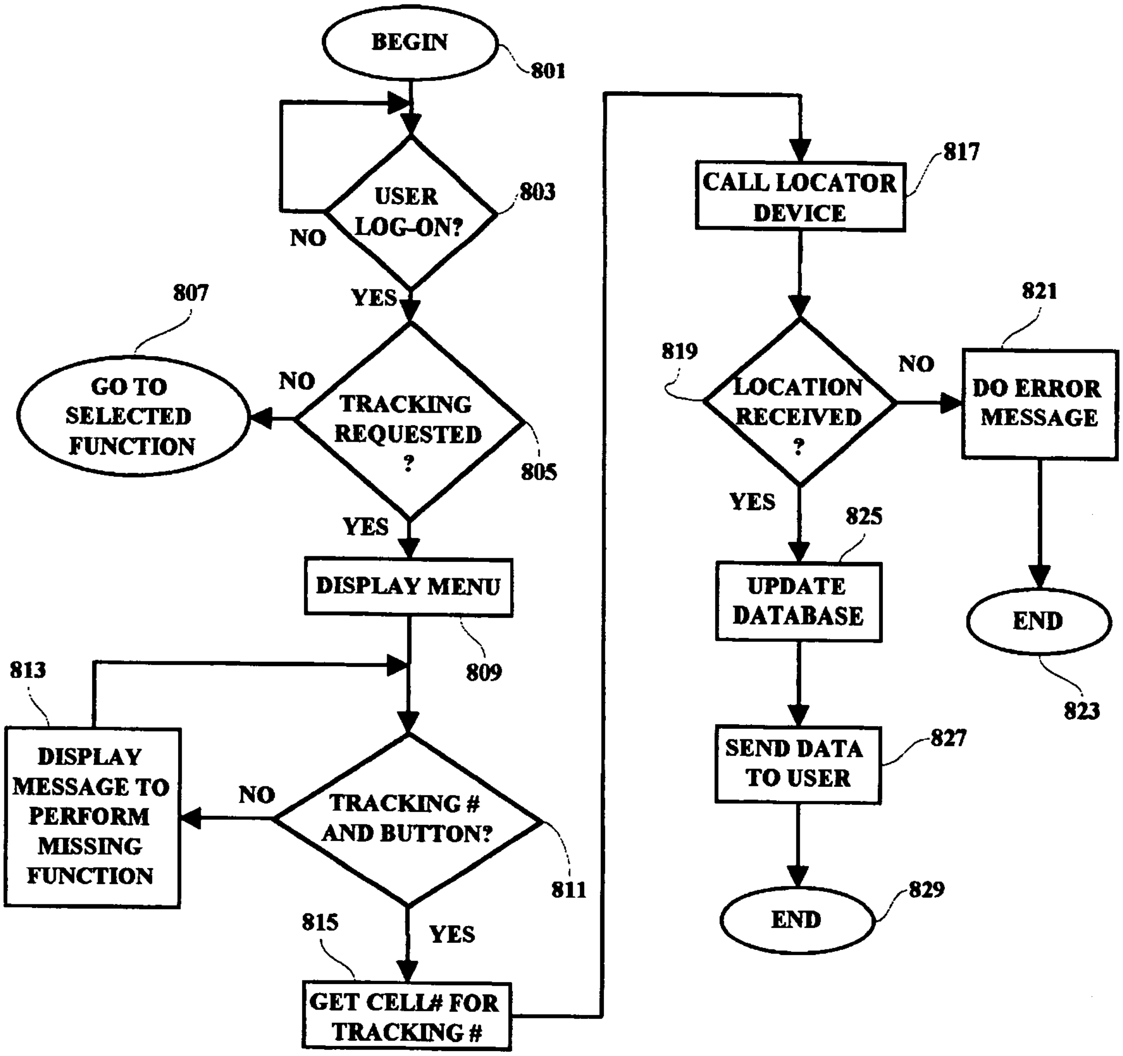

BEGIN
801
USER LOG-ON?
803
NO
YES
TRACKING REQUESTED ?
805
NO
GO TO SELECTED FUNCTION
807
YES
DISPLAY MENU
809
TRACKING # AND BUTTON?
811
NO
DISPLAY MESSAGE TO PERFORM MISSING FUNCTION
813
YES
GET CELL# FOR TRACKING #
815
CALL LOCATOR DEVICE
817
LOCATION RECEIVED ?
819
NO
DO ERROR MESSAGE
821
END
823
YES
UPDATE DATABASE
825
SEND DATA TO USER
827
END
829

FIG. 8

PACKAGE TRACKING SYSTEM

RELATED APPLICATIONS

Subject matter disclosed and not claimed herein is disclosed and claimed in related co-pending application, application Ser. No. 09/240444, which is assigned to the assignee of the present application and included herein by reference.

FIELD OF THE INVENTION

The present invention relates generally to information processing systems and more particularly to a methodology and implementation for locating objects being shipped between locations.

BACKGROUND OF THE INVENTION

The shipping industry has experienced rapid growth in recent years. Much of the increased business is related to the business of the Internet and the ability to order items from websites using the Internet and having the ordered items delivered directly to the buyer's home. Many of the items ordered are quite expensive and the value of the items may exceed several thousand dollars, especially for computer systems, monitors and subsystems. In addition to large articles, important documents are also being shipped door-to-door as a standard method of shipping to insure timely and expedient delivery. With such shipments, it is both useful and important to be able to track the shipped article and be able to locate the article at any point during its journey from a sender to a receiver. As used herein, the terms "shipper" and "sender" are used interchangeably and refer to any entity sending, or contracting to send, an item from one location to another.

In the past, shipping companies have been able to track such merchandise to some extent. For example, a customer may know if the merchandise has been picked-up from the sender's location, or whether the shipped merchandise has arrived at a warehouse at the receiver's location. Generally, however, there has been no way to accurately know the precise location of shipped merchandise at points in-between origin and destination locations. Such tracking systems usually always require the input of data by a sender's agent in order to be able to track items being sent. For example, articles may have a bar code which may be scanned as items are logged into various locations along the way.

Thus there is a need for an improved tracking methodology which enables an interested party to determine a precise location of an article being sent at any point along the route from a sender to a receiver.

SUMMARY OF THE INVENTION

A method and implementing system are provided in which an item being sent from a sender to a receiver includes an item locator device for locating the item during transit. In an exemplary embodiment, the item locator device includes a wireless telephone function coupled to an item location function. The location function is able to determine the location of the item being sent through a Global Positioning System (GPS) or through another location-determining system such as a wireless telephone network. The telephone portion of the locator device, is operable to return location information to a requester when the locator device telephone circuitry is called by the requester. In an example, a sender maintains a database at the sender's server containing information concerning each shipping transaction. A requester is enabled to log-on to a sender's website and access the database to determine the last location and time of query for the item being shipped. The requester may access the sender's database directly for the requested location information or initiate a call from the sender to the item being shipped to update the sender's database at the time of the call. In another embodiment, a requester is able to call the item locator device directly for the location information.

✓

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the present invention can be obtained when the following detailed description of a preferred embodiment is considered in conjunction with the following drawings, in which:

FIG. **1** is an illustration of a global environment in which the present invention may be implemented;

FIG. **2** is a simplified schematic diagram showing a shipping container including a container locator compartment;

FIG. **3** is an exemplary illustration of an exemplary database which is maintained by a sender's site;

FIG. **4** is a schematic block diagram illustrating an exemplary phone portion of a container locator device;

FIG. **5** is a schematic block diagram illustrating an exemplary position locator portion of a container locator device;

FIG. **6** is an exemplary block diagram of several of the major components of a computer system;

FIG. **7** is an exemplary illustration of a sender's tracking page which may be accessed in tracking items shipped in accordance with the present invention; and

FIG. **8** is a flow chart illustrating an exemplary operational sequence which may be implemented in accordance with the present invention.

DETAILED DESCRIPTION

The various methods discussed herein may be implemented within a typical computer-related system which may include a workstation or personal computer. For example, the sender of an item being shipped may implement a server system and a customer or other requester may access the sender's server with a personal computer through an interconnection network such as the Internet. In general, an implementing computer system may include a plurality of processors in a multi-bus system in a network of similar systems. However, since the workstation or computer system used in practicing the present invention in an exemplary embodiment, is generally known in the art and composed of electronic components and circuits which are also generally known to those skilled in the art, circuit details beyond those shown are not specified to any greater extent than that considered necessary as illustrated, for the understanding and appreciation of the underlying concepts of the present invention and in order not to obfuscate or distract from the teachings of the present invention.

In FIG. **1**, there is shown an illustration of a global environment in which the present invention may be implemented. As shown, a shipped item **13** is being shipped from a sender **11** to a receiver **15**. The receiver **15** may be an agent of the sender, an interested third party or the ultimate receiver of the item being shipped. The item being shipped **13** is shown to include a locator compartment **17** which is used in the exemplary embodiment to contain a locator device within. The locator device in the compartment **17** is able to determine the device's position at any time by reference to a GPS system, including GPS satellites **19** and **21**, or by reference to a wireless phone system which may include, for example, wireless towers **23**, **25** and **27**. Also shown in FIG. **1** is an interconnection network **33** such as the Internet, and a requester A **29** which may be any party interested in the progress of the shipment from the sender **11** to the receiver **15**. As illustrated, the requester is in communication with the sender site **11** and may also be coupled to the receiver site **15**. The requester **29** may be using a personal computer or merely a wireless Internet device in communicating with the sender **11** or the receiver **15** through the network **33**.

In an exemplary operation, a requester is enable to communicate with the sender site **11** and initiate, for example, a communication with the locator device on the shipped item **13**. The location information is transmitted from the shipped item **13** back to the sender's server **11** where it may be accessed by the requester. The location database may be stored both at the sender site **11** with a copy of the database at the receiver site **15**. In an alternate operation, the requester A **29** may directly access the locator device on the shipped item through a wireless phone system for example, and receive location information directly from the shipped item **13** without involving the sender **11** or the receiver **15**.

FIG. **2** is a simplified schematic diagram showing a shipping container **201** including a container locator compartment **207**. An article being shipped **203** is contained within packing material **205**. The locator compartment **207** is arranged to securely house a locator device which includes a location-determining device **211** and a wireless telephone **209** which is shown schematically in the drawing. It is noted that the phone portion of the locator device may actually be a standard cell phone or it may be one or more integrated circuits or chips which provide the telephonic functions performed in connection with the present invention.

FIG. **3** is an illustration of an exemplary database which is maintained by a sender site **11**. As shown, the database contains a tracking number for each article being shipped. Also shown is a cell phone number associated with each item together with the point of origin, the destination, the last location and the time and date that the last location was determined. The location field may, for example, contain the location in terms of a city as well as more precise map coordinates such as "GG-51" etc., which may be used to determine location in more detailed terms such as the nearest street intersection within the designated city. Such detailed information is selectively provided by the locator device within the item being shipped, and is selectively accessed by the requester A **29** or other interested party who is informed of the cell phone number of the locator device.

FIG. **4** is a schematic block diagram illustrating an exemplary phone portion of a container portable locator device **100**. The device **100** comprises a telephone **110** and a position or location detector **150** (FIG. **5**). The position detector **150** determines the position of the device **100** and provides that position information **175** to the telephone **110**. The telephone then sends the position information **175** on a sent signal **125S** through a telephone responder section **115** and a telephone network to a requester **29**. In a preferred embodiment, the telephone **110** is capable of sending the sent signal **125S** over a "free space" or wireless connection to the public telephone system which is sometimes referred to as the Public Switch Telephone Network (PSTN). Cellular telephones and networks are well known in the art. The telephone **110** can be any of those types of telephone handsets with certain additional features as hereinafter described. In one preferred embodiment, a phone system called "Iridium" may be used. That particular system uses Iridium satellites to provide a reliable dial-tone to Iridium handsets anywhere in the world. Other communication networks may also be used in various implementations of the present invention.

The telephone **110** has a standard power function **140**, i.e. a battery, to power the memory **137** and access code section **139** of the telephone. The telephone **110** will send telephone signals **125S** through a telephone responder **115** to a telephone antenna **101**. The telephone is arranged to receive phone signals **125R** through antenna **101**. The signals **125R** will be processed by the telephone receiver **120**. Optionally, the telephone will have a known caller ID process **135** that will identify a requester making a request of the device **100**, e.g. by providing the telephone number of the requester.

The telephone **110** has an interface **145** that performs the function of receiving position information **175** from the position detector **150**. As required, the position information **175** will be stored in phone memory **137** where it is accessed by a phone process **130** which transfers the position information **175** to the telephone responder **115**. The responder **115** sends the position information **175** on the sent signal **125S** to the requester which may be the sender **11**, the receiver **15**, the requester A **29** or any other interested party calling the locator cell phone. In other embodiments, the phone process **130** is a simple memory **137** access similar to a memory read function.

The phone process may also perform other functions. For example, in one embodiment the phone process determines the requester identification from the call ID process **135**. The process **130** then determines that the requester is listed in a requester access code memory **139** before the position information **175** is returned to the requester in the sent signal **125S**. In another embodiment, the phone process **130** monitors a clock and/or timer signal and causes the position information **175** to be accessed by a position information request **177** from the position detector **150** and sends the position information **175** on a sent signal **125S** at predetermined times of the clock and/or at predetermined intervals of the timer **114**, e.g. periodically every **10** minutes. In another embodiment, the process determines that a request has been received on the received signal **125R** through the telephone antenna **101** and the receiver **120** and causes the position information **175** to be sent on the signal **125S** in response to the request.

FIG. **5** is a schematic block diagram illustrating an exemplary position locator portion of the locator device **100**. The position detector **150** is any known device capable of determining its position on the small planet Earth. This includes GPS systems as well as cellular and other location determining systems. In a preferred embodiment, the position device **150** is a GPS position detection device that is capable of determining the position of the portable location device **100**. The position detector **150** has a position antenna **151** that receives position signals **170** from satellites, such as satellites **19** and **21** in the GPS. A position process uses the position signals **170** to determine the actual position of the portable locating device **100**, i.e. the position information **175**. The position detector **150** has a power source **190**, e.g. a battery, that may or may not be the same as the telephone power source **140**.

The position detector **150** includes a position interface **195** that provides the position information to the telephone **110**. Optionally, the position interface **195** can receive position information requests **177** from the telephone **110**. A position memory **187** is provided as required to store the position information **175**. Optional secondary data **189** about the portable locating device **100** or person and/or object associated with the device **100** can also be provided in a secondary memory **189**.

The phone interface **145** and/or position interface **195** may also be separate as shown or be a common interface. Such interfaces are well known and examples of such interfaces **145** and **195** include direct memory access interfaces, general phone modems, and RS-232 interfaces. Other examples include PCMCIA cards or PC cards that are available in various types. Some receive an RJ11 phone line connection and others are especially made for cellular or other wireless phones. Other interfaces that can convert the position information **175**, e.g. an ASCII or other binary representation, into a format that can be communicated by a telephone, e.g. tone signals, are also included within the scope of the disclosed implementation.

It is noted that the timer clock **114**, the phone memory **137**, the requester access code memory **139**, the position memory **187**, the secondary data memory **189**, the power **140** and any other logic circuits, central processing units and system memory can reside solely in the telephone system **110**, solely in the position detector **150**, outside the telephone **110** and the position detector **150**, or be independent of the telephone **110** and the position detector **150** as determined by a given design choice.

In FIG. **6**, there is shown several of the major electronic subsystems which are included in an exemplary embodiment of either or both the server system of the sender **11**, the receiver **15** or the computer system of the requester A **29**. As shown, a processor **601** is coupled to a system bus **603** which may be any host system bus. It is noted that the processing methodology disclosed herein will apply to many different bus and/or network configurations although only one example is illustrated. A memory subsystem **605**, a storage device **607** and selected medium devices **609** such as a diskette drive or a CD drive, are also shown connected to the system bus **603**. The information processing circuitry illustrated in FIG. **6** is arranged to establish a communication link and initiate communication with other processing systems and websites. The system, for example, may be connected through a network interface connection **613** to any appropriate network including the Internet, or to a gateway computer for connection to the Internet and selected websites which contain useful information for access. The exemplary system also includes an input interface **611** to enable administrator input to the server system, and also a video system for display of various aspects of the designated transactions, including the sender's database information (FIG. **3**) at the various site locations.

FIG. **7** is an illustration of an exemplary sender's tracking page **701** which may be accessed through interconnection network **33** by a requester in tracking items shipped in accordance with the present invention. As shown, in addition to the normal browser format and menu, the display contains a block **703** into which a requester may insert the tracking number of the article being shipped. This number may be made known to interested parties including the receiver **15** and the requester A **29**, when it is input to the sender's database when the item is packaged and shipped. After a requester inputs the tracking number **703**, the requester may elect to cancel the query or to continue the query by pointing and clicking the pointer **707** on the hypertext "TRACK ITEM" **705** for example. At that time, the sender's server will initiate a process as set forth in flowchart form in FIG. **8**.

As shown in FIG. **8**, the tracking process begins **801** when a user or requester log-on is detected **803**. It is contemplated that the user may have other options from which to select at the sender's website, however when tracking is requested **805**, the appropriate menu is displayed **809** to the user to input additional details such as the tracking number. If an option other than tracking is selected, then the program goes to perform the selected option **807**. If, after a predetermined time, the requester has not entered the necessary information for tracking, the requester may be prompted to input the necessary information **813**. After selected tracking information is input and the tracking command is received **811**, the sender's server gets **815** the appropriate cell phone number for the identified tracking number from the sender's database, and calls **817** the locator device **100** within the identified item **13** that is in transit. The location information is returned as noted above, and when the location is received **819** by the sender's server, the sender's database is updated **825** and the location information is sent to or otherwise made available to the user or requester **827** as the process ends **829**. The location information may be sent as a text phone message to the requester's wireless phone or simply made available on the sender's website for access by the requester through the requester's personal computer or other wireless device. If after a predetermined time, the location information is not received by the sender's server, an error message may be caused to be communicated to the requester **821** in any of the above noted ways, and the process will terminate **823**. After the item being shipped is received at the receiver site **15**, the database is updated to indicate that the corresponding locator device is available for use in connection with another shipment. The locator device may be used in a subsequent shipment that originates at the receiver site or the locator device may be returned to the sender site for use in another shipment from the sender site. The database is updated continuously to maintain a record of where the locator device is at any given time and whether or not it is associated with any particular shipment at any particular time.

The method and apparatus of the present invention has been described in connection with a preferred embodiment as disclosed herein. The disclosed methodology may be implemented in a wide range of sequences, menus and screen designs to accomplish the desired results as herein illustrated. Although an embodiment of the present invention has been shown and described in detail herein, along with certain variants thereof, many other varied embodiments that incorporate the teachings of the invention may be easily constructed by those skilled in the art, and even included or integrated into a processor or CPU or other larger system integrated circuit or chip. The disclosed methodology may also be implemented solely in program code and executed to achieve the beneficial results as described herein. Accordingly, the present invention is not intended to be limited to the specific form set forth herein, but on the contrary, it is intended to cover such alternatives, modifications, and equivalents, as can be reasonably included within the spirit and scope of the invention.

What is claimed is:

1. A method for determining location of an item being shipped from a sender to a receiver, said method comprising:

providing a container for receiving said item, said container being arranged with a receptacle for receiving a locator device;

placing said locator device in said receptacle, said locator device including wireless telephone circuitry coupled to a position detecting device; and placing a call to said wireless telephone circuitry, said wireless telephone circuitry being responsive to a receipt of said call for returning signals representative of a position of said container as determined by said locating device.

2. The method as set forth in claim 1 wherein said receptacle is a compartment inside of said container.

3. The method as set forth in claim 1 wherein said receptacle is portable, said receptacle being selectively detachable from said container.

4. The method as set forth in claim 1 and further including returning said locator device to said sender after said container arrives at said receiver, said method further including maintaining a database of positions of said container as transmitted from said locator device to said sender.

5. A method for determining location of an item being shipped from a sender to a receiver, said method comprising:

coupling a locator device to said item, said locator device including wireless telephone circuitry coupled to a position detecting device, said locator device being selectively operable for determining a location of said item, said wireless telephone circuitry being responsive to a receipt of a telephone call for returning signals representative of said location of said item as determined by said locating device; and

enabling a requester to access a sender computer system, said sender computer system being selectively operable to provide a said location of said item to said requester.

6. The method as set forth in claim 5 wherein said location is provided in response to an input from said requester.

7. The method as set forth in claim 6 wherein said sender computer system is operable in response to said input to communicate with said locator device to determine a current location of said item, said locator device being further operable for transmitting said current location to said sender computer system.

8. The method as set forth in claim 6 wherein said sender computer system includes a location database, said location database being periodically updated by said locator device with information concerning a location of said item, said sender computer system being operable in response to,said input to access said database to provide a recent location of said item to said requester.

9. The method as set forth in claim 8 wherein a copy of said location database is maintained at an alternate computer site remote from said sender, said requester being enabled to make said input to said alternate computer site.

10. The method as set forth in claim 8 wherein said location database includes a series of locations corresponding to a sequence of points along a route traveled by said item from said sender to said receiver.

11. The method as set forth in claim 10 wherein said location database includes a series of times corresponding to times when said sequential points were determined.

12. The method as set forth in claim 10 wherein said location database further includes a tracking reference indicium corresponding to each of a plurality of items being shipped, said location database further including a phone number for said wireless telephone circuitry for each of said tracking reference indicia.

13. The method as set forth in claim 12 wherein said requester is given access to only said tracking number.

14. The method as set forth in claim 12 wherein said requester is given access to said phone number after inputting an appropriate tracking number.

15. The method as set forth in claim 5 wherein said sender computer system comprises a server, said requester being enabled to access said server through a wireless device.

16. The method as set forth in claim 15 wherein said requester is enabled to access said server through a network connection.

17. The method as set forth in claim 16 wherein said network connection is an Internet connection.

18. The method as set forth in claim 5 wherein said sender computer system comprises a server, said requester being enabled to access said server through a personal computer system.

19. The method as set forth in claim 18 wherein said requester is enabled to access said server through a network connection.

20. The method as set forth in claim 19 wherein said network connection is an Internet connection.

21. The method as set forth in claim 1 wherein said locator device is arranged to determine a position of said locator device relative to a global satellite system.

22. The method as set forth in claim 1 wherein said locator device is arranged to determine a position of said locator device relative to a network of cellular telephone stations covering a predetermined geographical area.

23. A storage medium including machine readable coded indicia, said storage medium being selectively coupled through a reading device to processing circuitry within a computing system, said reading device being selectively operable to read said machine readable coded indicia and provide program signals representative thereof, said program signals being effective to process a determination of location of an item being shipped from a sender to a receiver, wherein said item being shipped is coupled to a locator device, said locator device being capable of determining and selectively transmitting a location of said locator device to said computing system, said program signals being selectively operable for:

enabling a requester to access said computer system;

providing a requester interface to said computer system to enable said requester to provide input to said computer system; and

responding to said input to provide a location of said locator device to said requester, said program signals being further effective for maintaining a database containing a sequence of positions through which said item has passed along a route traveled by said item, and enabling an updating of said database when said item has arrived at said receiver and when said locator device is returned to said sender.

24. A processing system at a sender site, said processing system including a system bus, a processor, a memory system, and a network interface, all coupled to said system bus, said processing system being operable in response to an input from a requester for providing a location of an item being shipped from said sender to a receiver, said processing system being selectively operable for maintaining a database containing a sequence of positions through which said item has passed along a route traveled by said item, said processing system being further selectively operable for enabling an updating of said database when said item has arrived at said receiver and also when said locator device is returned to said sender.

* * * * *

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Rudolph et al. (43) **Pub. Date: Jun. 8, 2006**

(54) **MATERIALS HANDLING, TRACKING AND CONTROL SYSTEM**

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(22) Filed: **Apr. 17, 2001**

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Publication Classification

(51) **Int. Cl.**
H04Q 5/22 (2006.01)

(52) **U.S. Cl.** **340/10.41**; 340/10.51; 340/572.1

(57) **ABSTRACT**

A product information system comprises a product package, container or support having an RFID tag including data memory means for storing at least a unique digital identification code for the product and at least one remote storage access code, including a URL, for accessing additional dynamic and/or static data associated with the product which is stored outside the tag and container, the system being operative to retrieve the identification code and remote access code and to access the additional data via the Internet.

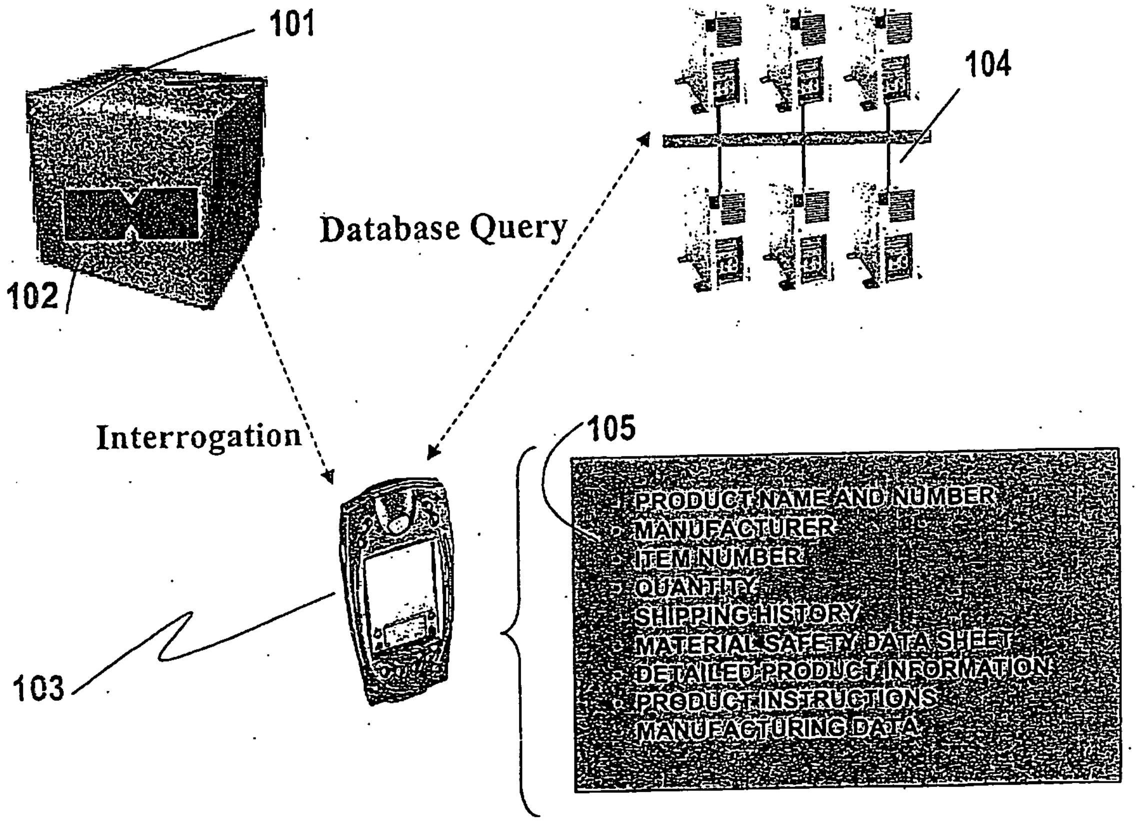


FIG. 1

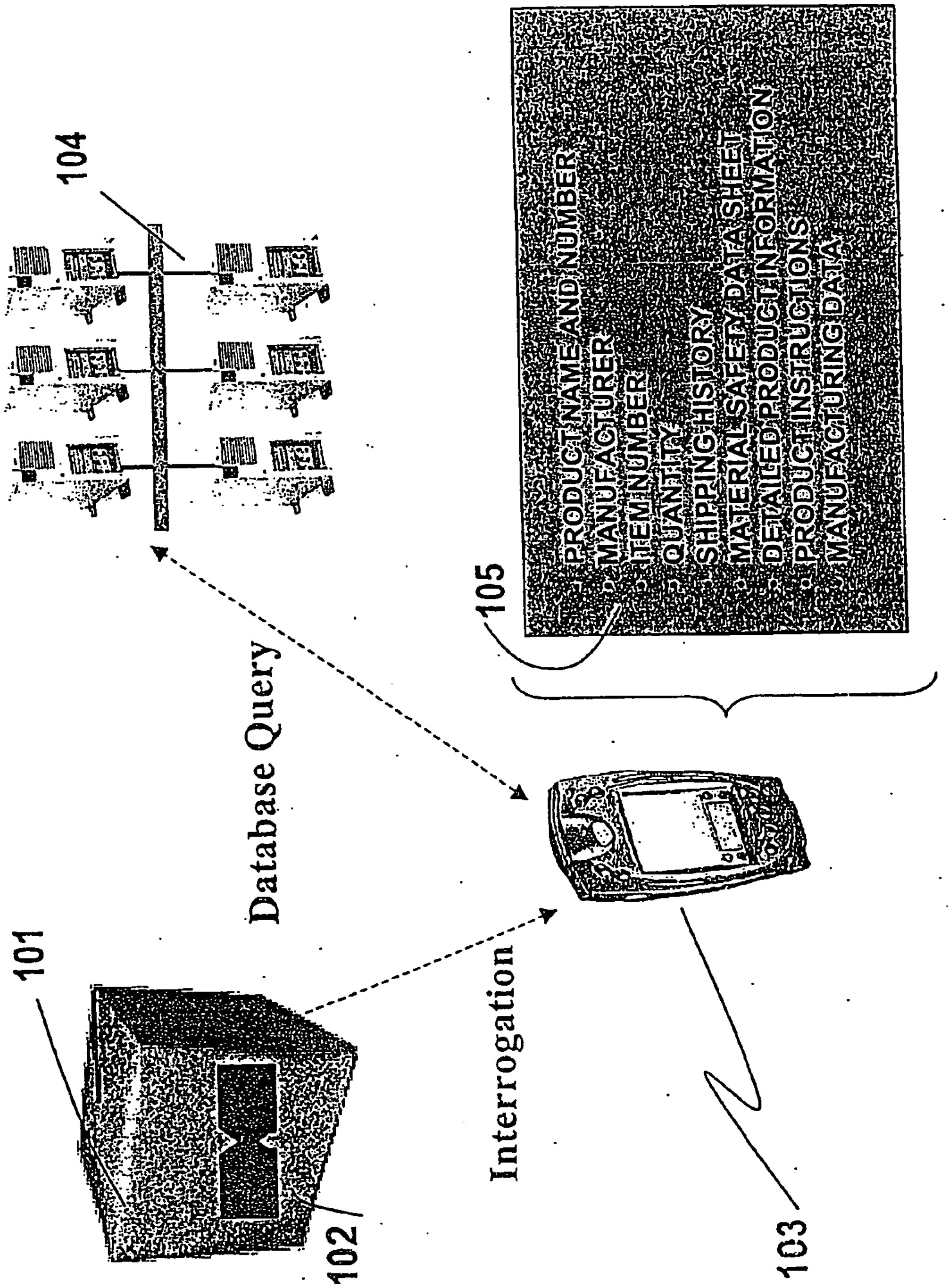
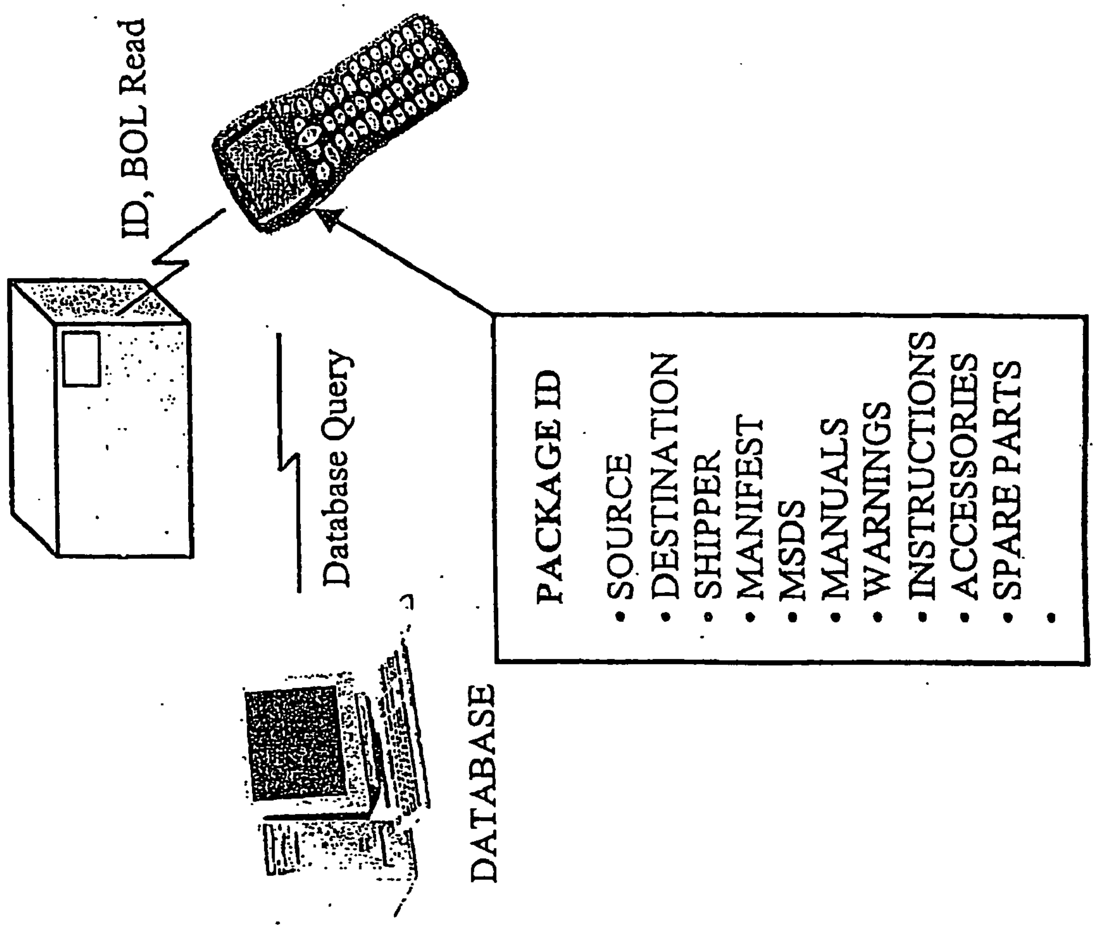

104
105
PRODUCT NAME AND NUMBER
MANUFACTURER
ITEM NUMBER
QUANTITY
SHIPPING HISTORY
MATERIAL SAFETY DATA SHEET
DETAILED PRODUCT INFORMATION
PRODUCT INSTRUCTIONS
MANUFACTURING DATA
Database Query
101
Interrogation
102
103

FIG. 2


ID, BOL Read
Database Query
DATABASE
PACKAGE ID
• SOURCE
• DESTINATION
• SHIPPER
• MANIFEST
• MSDS
• MANUALS
• WARNINGS
• INSTRUCTIONS
• ACCESSORIES
• SPARE PARTS
•

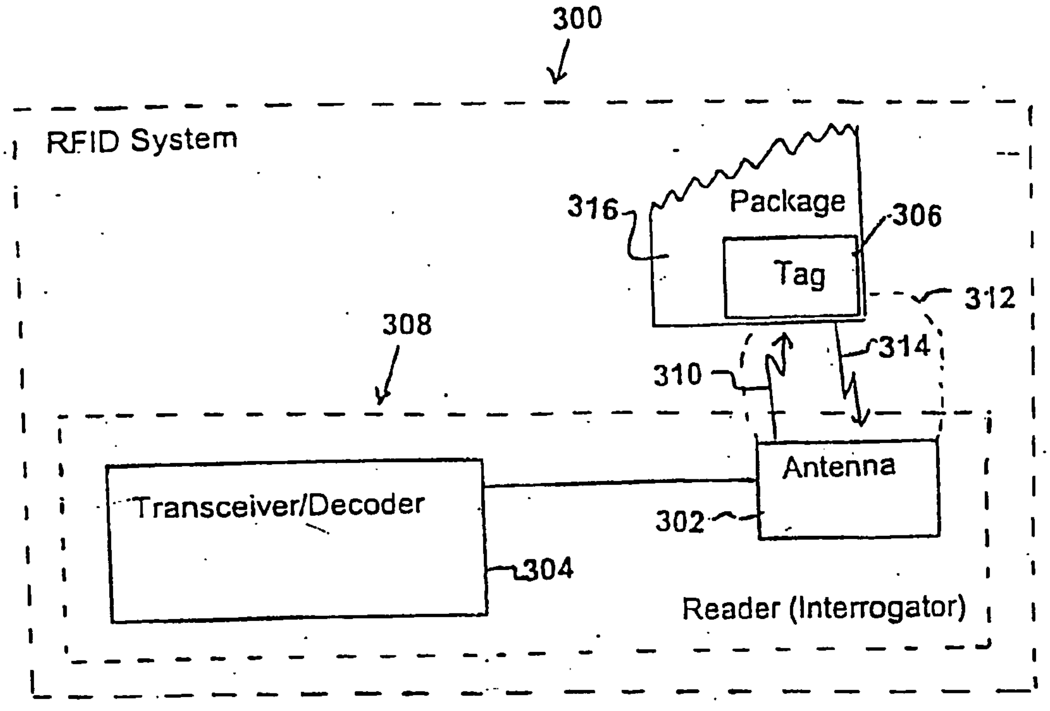

RFID System
Package
Tag
Antenna
Transceiver/Decoder
Reader (Interrogator)

FIG. 3

MATERIALS HANDLING, TRACKING AND CONTROL SYSTEM

RELATED APPLICATION

[0001] This application claims the priority of U.S. Provisional Application No. 60/197,896, filed Apr. 17, 2000 which is herein incorporated by reference.

FIELD OF THE INVENTION

[0002] This invention relates to the field of packaging, and more particularly to a product container, support and/or packaging which is provided with capabilities to interface with computer systems and database systems to facilitate handling, tracking and control of packaged products.

BACKGROUND OF THE INVENTION

[0003] Currently, there often is a need to access a significant amount of MSDS (Material Safety Data Sheet) information associated with products as they move through their life cycles. There is a need to associate accurate and up to date MSDS information and product tracking information of various types with either a type of product or even with a specific individual item of that type. Data retrieval and association (tracking) of specific, correct types and items of product are often arduous, time consuming, error prone and sometimes impossible tasks with currently available systems.

SUMMARY OF THE INVENTION

[0004] The present invention relates to a system utilizing an RFID (Radio Frequency IDentification) tag, wherein the RFID tag provides one or more links, for example, either locally or via the Internet, to MSDS or other dynamic or fixed information databases for one or many products, including individual items of one or many particular types of products.

BRIEF DESCRIPTION OF THE DRAWING

[0005] A more complete understanding of the present invention may be obtained from consideration of the following description in conjunction with the drawing in which:

[0006] **FIG. 1** is a functional diagram of a system according to the present invention in which local and remotely stored product information is accessed;

[0007] **FIG. 2** is a functional diagram of a system according to the invention in which locally stored product information is accessed, and

[0008] **FIG. 3** is a functional diagram of a Radio Frequency Identification system employing the present invention.

DETAILED DESCRIPTION

[0009] Although the present invention is particularly well suited for tracking product movement and retrieving MSDS and product information, and will be so described, the present invention is equally well suited for use where accurate and up to date information of other types is to be associated with a particular product type or item.

[0010] Referring to **FIG. 3**, a Radio Frequency Identification (RFID) system **300** employing the present invention comprises a coil or other type of antenna **302**, a transceiver (with decoder) **304**, and a transponder (commonly called an RFID tag) **306** programmed with unique stored information (data). The identification tag **306** contains encoded data corresponding to a unique item identification code along with a limited amount of other product related and/or "lookup" data.

[0011] The antenna **302** typically receives and sends radio frequency signals to activate tag **306** and to read and write data to and from the tag **306**. Antenna **302** may be any one of a variety of shapes and sizes. For example, antenna **302** can be built into a doorway to receive tag data from or to write data to product containers, supports, packages or other things passing through the doorway. An electromagnetic field produced by antenna **302** can be constantly present when multiple tags may be expected to pass through the doorway in a more or less continuous or regular stream. If constant interrogation is not required, a sensor device may be provided to activate the field when required (for example, when an item approaches the threshhold).

[0012] Often the antenna **302** is configured with the transceiver/decoder **304** to become a reader (interrogator) **308**, which can be configured, for example, as a hand held or a fixed-mount device. The reader **308** emits radio frequency waves **310** across distances of anywhere from one inch to one hundred feet or more, depending on the signal power output and the operational radio frequency used. When an RFID tag **306** passes through an electromagnetic sensing zone **312**, tag **306** detects the activation signal of reader **308** and responds by emitting code-containing radio frequency waves **314**. Tag **306** itself may include an antenna (see, for example, **FIG. 1** and related discussion below). The reader **308** decodes the data encoded in an integrated circuit (memory) of RFID tag **306** and the data is passed to a host computer (see **FIG. 1**) for processing.

[0013] RFID tag **306** may come in a wide variety of shapes and sizes. RFID tag **306** may be categorized as either passive or active. Active RFID tags **306** may be powered by an internal battery (not shown) and typically have read/write capabilities; i.e. tag data can be rewritten or modified. The memory capacity of an active tag **306** will differ according to application requirements. Some RFID systems operate, for example, with 1 MB of internal memory. In a typical read/write RFID system **300**, a tag **306** can provide a set of instructions or information and the tag **306** can receive and store encoded information. This encoded information or data then becomes part of the recorded history of the tagged product **316**. The battery power of an active tag **306** generally gives it a greater read range. The trade off is greater size, higher cost and a more limited operating life.

[0014] Passive RFID tags **306** operate without a separate external power source and obtain operating power from the reader **308**. Passive tags **306** consequently are usually lighter in weight than active tags **306**, are less expensive and offer a theoretically unlimited operational lifetime. A trade off is that passive tags **306** generally have a smaller read range than active tags and typically require a higher powered reader.

[0015] Read-only tags **306** typically are passive and are programmed with a unique set of data (usually 32 to 128 bits) that cannot be modified (write once). Read-only tags **306** most often serve as a key or index into a database in much the same way as a barcode references a database which contains modifiable product-specific information.

[0016] Frequency ranges also distinguish RFID systems **300**. Low frequency (30 KHz to 500 KHz) systems typically have short reading ranges and lower system costs. These low frequency systems are most commonly used in security, access, asset tracking and animal identification applications. Higher frequency (850 MHz to 950 MHz and 2.4 GHz to 2.5 GHz) systems typically offer long read ranges (greater than ninety feet) and higher reading rates.

[0017] A significant advantage of RFID systems **300** is the non-contact, non-line-of-sight nature of the technology. Tags **306** can be read through a variety of conditions such as snow, fog, ice, paint, crusted grime, and other visually and environmentally challenging conditions where barcodes or other optically read technologies would be at a disadvantage. RFID tags **300** can also be read in challenging situations at high rates, responding in typical cases in on the order of one hundred milliseconds.

[0018] The range that can be achieved with an RFID system **300** is determined essentially by power available at the reader/interrogator **308** to communicate with tag **306**, power available within the tag **306** to respond and environmental conditions, including surrounding structures.

[0019] In **FIG. 1**, a materials handling, tracking and control system according to one embodiment of the present invention is illustrated. As is shown in **FIG. 1**, an RFID tag **102** is attached to a product support or package or container **101**. The RFID tag **102** contains a stored, unique identification code and stored product reference information. The latter may be used to trigger a database query in the form of an HTML (Hyper Text Markup Language) link via the Internet to a remotely located MSDS or other product-related information database **105** stored in one or more Internet web servers or database servers **104**. Database **105** contains, for example, product name and/or number, manufacturer's name, item serial number, quantity in the package **101**, shipping history (which is updated over time), Material Safety Data Sheet information (similarly updated), detailed product information, product operating instructions, manufacturing data and such other information as may be of value to a manufacturer, warehouseman, wholesaler, etc. in the chain of commerce. As indicated, the MSDS and other data in database **105** can be updated and maintained accurate, in contrast to physical MSDS documents attached to a product at the time of manufacture which is current, at best, as of the date of printing. By means of an interrogator/reader **103**, the RFID tag **102** is activated so that the MSDS or other information in database **105** may be accessed quickly in the event of an occurrence such as an accident or emergency. Information necessary for a HAZMAT response or for use by rescue, fire, emergency medical or clean up personnel can be available immediately and with a high confidence factor as to accuracy. Even in compromised conditions such as darkness, smoke, or cold, the MSDS or other information can be accessed without physical contact or undue proximity to the package or container **101**.

[0020] In one sequence of warehouse operations, such as at a production site, upon packing of container **101**, a label including a conventional optical barcode and text, is applied to container **101**. As part of the labeling process, Internet URL (Uniform Resource Locater) data pertaining to each package (item) **101** is stored in a database either at the place where labeling occurs or on an Internet server **104** accessible from that location. Typically, an operator optically reads the barcode on each item received and, using a scanner, determines the URL and other product identifying information to be written on RFID tag **102**. The scanner transmits the data to an RFID writer to produce the smart label on package **101**. Alternatively, the RFID tag **102** and associated barcode label are produced as an integral step in the manufacturing process of the container **101** itself, using similar steps and information sources as described above.

[0021] The RFID tag **102** typically contains a unique identification number, a URL address, a "From" field to identify the source of the package **101** and a "To" field to identify its destination. The URL address on tag **102** will automatically connect a user to a website which provides information such as trade name, manufacturer, product number, quantity per package, etc. Updated MSDS information may also be provided at the website. Tracking information such as SKU, serial number, container type, weight, customer purchase order number (where applicable), history of storage locations, dates and times, names of operators, and a host of other pertinent information readily may be stored remotely and made accessible locally as needed. With respect to manufacturing data, items such as date of manufacture, plant location and number, line number, lot number, warranty information and of the order of ten to twenty user customizable fields for additional information may be provided. Additional information such as product specifications, quality control testing, directions for use, repair information or spare parts ordering may also be included, all within the storage capabilities of the system.

[0022] Warehouse operators and customers will be able to interrogate RFID tag **101** using, for example, at least two different types of hand held terminals **103** (HHT). A "basic" HHT **103** is contemplated as a wireless terminal having a display and the capability to connect to the Internet. HHT **103** also contains an RFID reader/writer. Such a terminal **103** is primarily for use in a warehouse after a product container **101** is received for put-away and picking operations. Such a basic HHT **103** displays fields such as task number, task type (pick or put-away), item requested, quantity requested, location, operator number, date and time. An "advanced" HHT is also contemplated which has all of the features of the basic HHT and, in addition, can access the full Internet database for information such as product information, MSDS, tracking, manufacturing data, specifications, quality control data and ability to order additional product. The advanced HHT may also be linked to a hard copy device, if desired.

[0023] Different levels of access and ability to write or enter data can be controlled by means of operator ID information and password or PIN information in a customary manner for handling databases. Warehouse operators can be directed by the Basic HHT to pick and put-away locations, as well as to other locations on site such as truck bay or loading dock. Correct location can be confirmed in a mapped site by means of, for example, red and green pilot lights appearing on the Basic HHT as location changes. Operators can update the new "to" location and the system stores the "from" location as the prior "to" location. The item's current movement can be preserved on tag **102** itself to insure accurate location information availability even when Internet access is not available.

[0024] As shown in **FIG. 2**, the RFID tag **102** may carry an additional small amount of frequently used data, with access to other information being obtained through associated local or remote databases outside of the package, support, container or product itself.

[0025] While the various aspects of the invention have been described in connection with certain preferred embodiments, it should also be apparent that modifications may be made within the scope of the foregoing without departing from the broadest aspects of the invention as set forth in the following claims. Accordingly, this description is to be construed as illustrative only and is for the purpose of teaching those skilled in the art the best mode of carrying out the invention as currently contemplated. Details of the structure and its operation may be varied without departing from the invention.

1. A product information system comprising:

a product container;

an RFID tag associated with said container having data memory means for storing at least a unique digital identification code for said container and at least one remote storage access code for accessing additional data associated with said container and stored outside said tag memory means wherein the RFID tag includes at least two read or write updatable fields in said tag memory that contain data being associated therewith; and

means for retrieving said unique digital identification code said remote access storage code from said memory means.

2. A product information system according to claim 1 wherein:

said means for retrieving comprises an interrogator for accessing said memory of said tag and for utilizing said identification code and said remote storage access code to retrieve information uniquely associated with said container.

3. A product information system according to claim 2 wherein:

said uniquely associated information comprise Material Safety Data Sheet (MSDS) information for contents of said container.

4. A product information system according to claim 3 wherein:

said MSDS information is updated and is stored remotely from said product container.

5. A product information system according to claim 4 wherein:

said interrogator is coupled via an internet connection to said updated MSDS information.

6. A product information system according to claim 5 wherein:

said interrogator is coupled via said Internet connection to at least one data processor which has access to MSDS information for at least one or a plurality of products.

7. A product information system according to claim 6 wherein:

said interrogator further has a access to historical information uniquely associate with said container as identified by its unique digital identification code.

8. A product information system according to claim 7 wherein:

said interrogator has access to manufacture's information uniquely associated with each of a plurality of containers.

9. A method of providing accessible product related information uniquely associated with each product container comprising:

placing an RFID tag an Internet product container, said tag having a unique coded identifier for each said container;

storing in said RFID tag additional historical information unique to said product container; and

interrogating said RFID tag and coupling to an internet connection to provide unique historical information relating to the specific container and its product contents and wherein the RFID tag includes at least two read or write updatable fields in said tag memory that contain data being associated therewith.

10. A method of providing product information according to claim 9 wherein:

said historical information is selected from the group consisting of MSDS, Manufacturer's identity, date of manufacture, product number, item serial number and history of storage locations for said container.

* * * * *

(19) **United States**
(12) **Patent Application Publication** (10) **Pub. No.: US 2001/0056372 A1**
Rogan et al. (43) **Pub. Date: Dec. 27, 2001**

(54) **METHOD OF CONSUMER PRODUCT PROMOTION OVER THE INTERNET USING UNIQUE PRODUCT PACKAGE NUMBERS**

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(21) Appl. No.: **09/864,086**

(22) Filed: **May 23, 2001**

Related U.S. Application Data

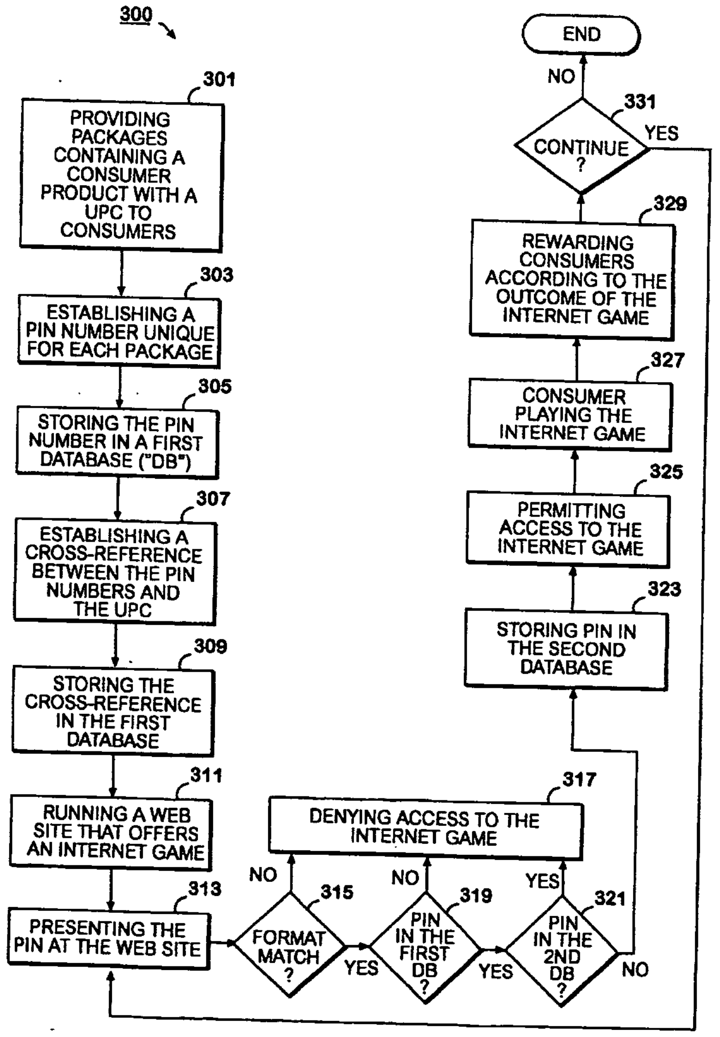
(63) Non-provisional of provisional application No. 60/206,573, filed on May 23, 2000.

Publication Classification

(51) **Int. Cl.**^{7} **G06F 17/60**
(52) **U.S. Cl.** **705/14**

(57) **ABSTRACT**

A method for consumer product promotion through the Internet. A consumer purchases a package containing a consumer product identified by a universal product code and having a package identification number unique to the package. The consumer can access to a Web site to play an Internet game offered therein upon presentation of the package identification number to the Web site if the package identification number satisfies the following two conditions: (1) the format of the package identification number matches a predetermined format, and (2) the package identification number has not been presented yet.


300
301
PROVIDING PACKAGES CONTAINING A CONSUMER PRODUCT WITH A UPC TO CONSUMERS
303
ESTABLISHING A PIN NUMBER UNIQUE FOR EACH PACKAGE
305
STORING THE PIN NUMBER IN A FIRST DATABASE ("DB")
307
ESTABLISHING A CROSS-REFERENCE BETWEEN THE PIN NUMBERS AND THE UPC
309
STORING THE CROSS-REFERENCE IN THE FIRST DATABASE
311
RUNNING A WEB SITE THAT OFFERS AN INTERNET GAME
313
PRESENTING THE PIN AT THE WEB SITE
315
FORMAT MATCH ?
NO
YES
317
DENYING ACCESS TO THE INTERNET GAME
319
PIN IN THE FIRST DB ?
NO
YES
321
PIN IN THE 2ND DB ?
YES
NO
323
STORING PIN IN THE SECOND DATABASE
325
PERMITTING ACCESS TO THE INTERNET GAME
327
CONSUMER PLAYING THE INTERNET GAME
329
REWARDING CONSUMERS ACCORDING TO THE OUTCOME OF THE INTERNET GAME
331
CONTINUE ?
YES
NO
END

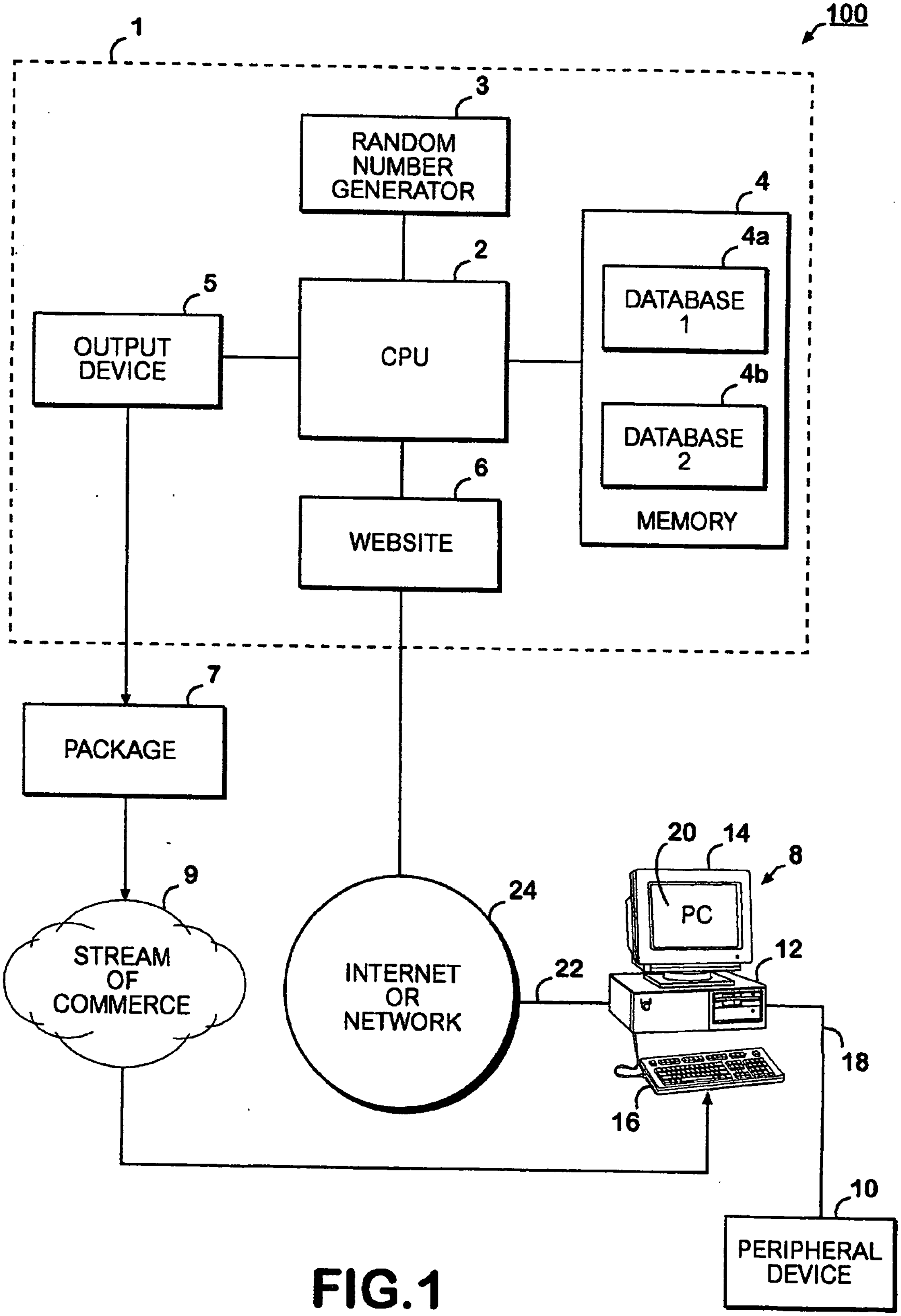

100
1
3
RANDOM NUMBER GENERATOR
4
4a
2
5
DATABASE 1
OUTPUT DEVICE
CPU
4b
DATABASE 2
6
MEMORY
WEBSITE
7
PACKAGE
20
14
8
9
24
PC
STREAM OF COMMERCE
INTERNET OR NETWORK
12
22
18
16
10
PERIPHERAL DEVICE

FIG.1

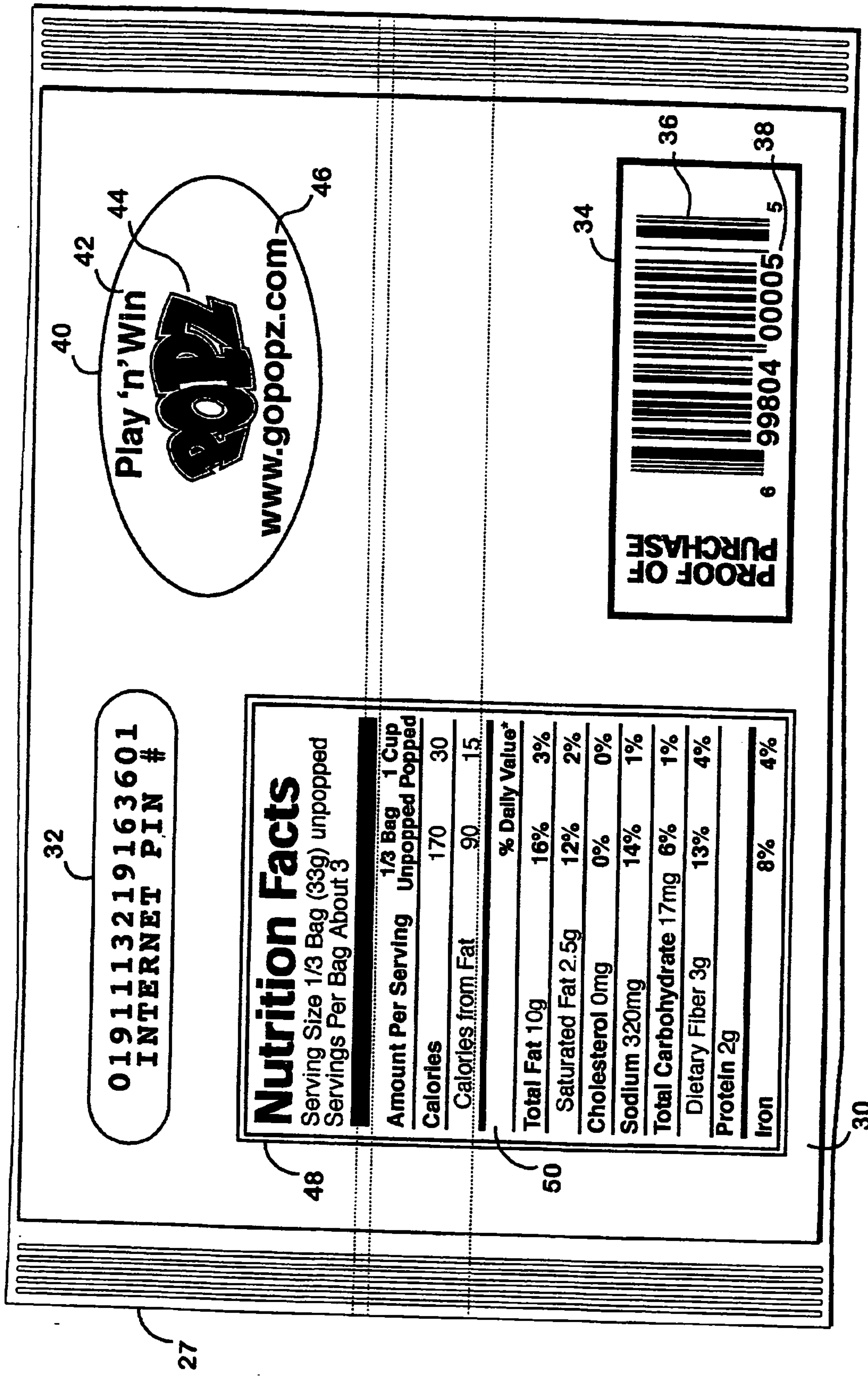

32
0191113219163601
INTERNET PIN #
40
42
44
46
Play 'n' Win
www.gopopz.com
34
36
38
6 99804 00005 5
PROOF OF PURCHASE
48
Nutrition Facts
Serving Size 1/3 Bag (33g) unpopped
Servings Per Bag About 3
Amount Per Serving
1/3 Bag Unpopped
1 Cup Popped
Calories 170 30
Calories from Fat 90 15
% Daily Value*
Total Fat 10g 16% 3%
Saturated Fat 2.5g 12% 2%
Cholesterol 0mg 0% 0%
Sodium 320mg 14% 1%
Total Carbohydrate 17mg 6% 1%
Dietary Fiber 3g 13% 4%
Protein 2g
Iron 8% 4%
50
30
27

FIG.2

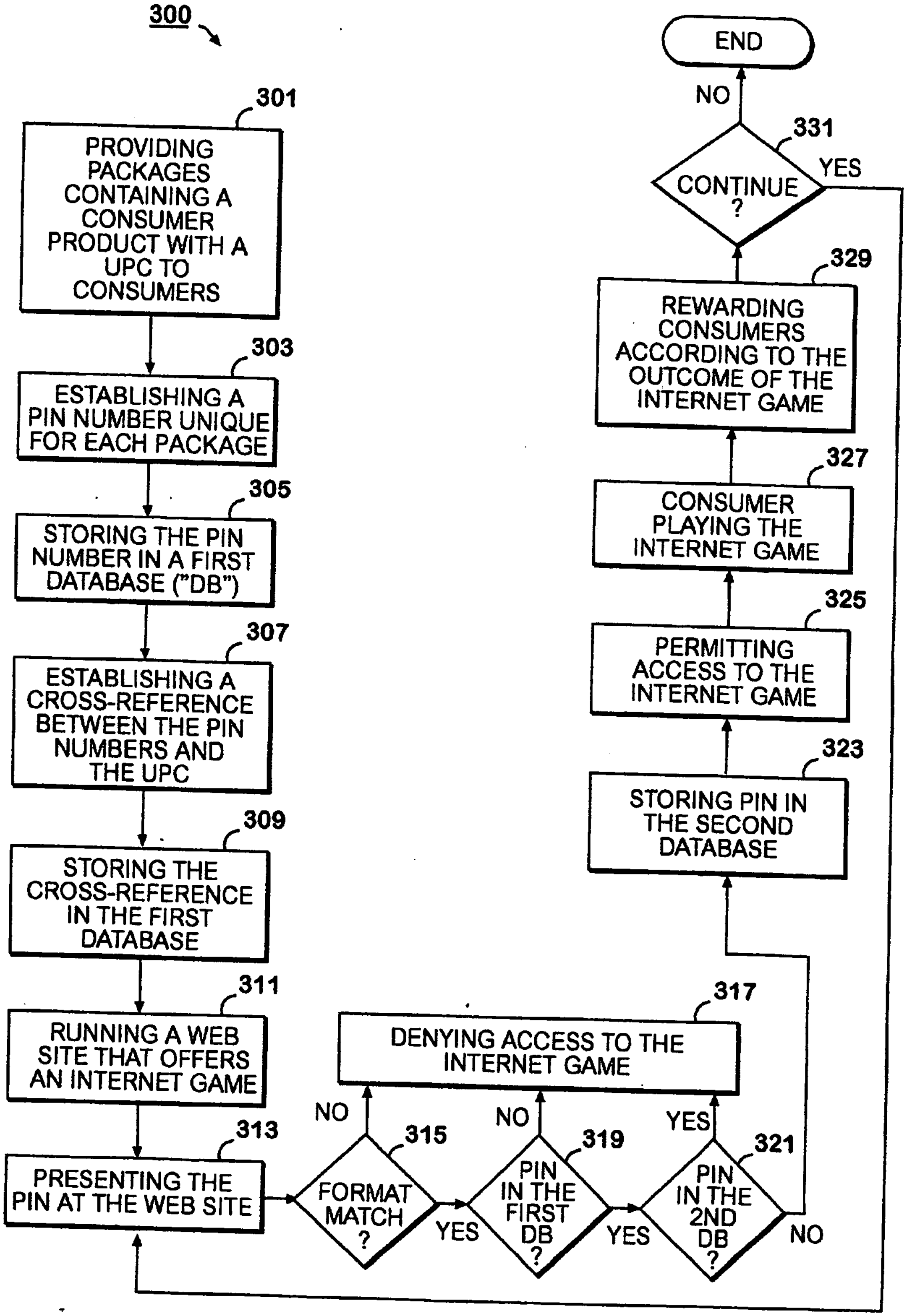

300
301
PROVIDING PACKAGES CONTAINING A CONSUMER PRODUCT WITH A UPC TO CONSUMERS
303
ESTABLISHING A PIN NUMBER UNIQUE FOR EACH PACKAGE
305
STORING THE PIN NUMBER IN A FIRST DATABASE ("DB")
307
ESTABLISHING A CROSS-REFERENCE BETWEEN THE PIN NUMBERS AND THE UPC
309
STORING THE CROSS-REFERENCE IN THE FIRST DATABASE
311
RUNNING A WEB SITE THAT OFFERS AN INTERNET GAME
313
PRESENTING THE PIN AT THE WEB SITE
315
FORMAT MATCH ?
NO
YES
317
DENYING ACCESS TO THE INTERNET GAME
319
PIN IN THE FIRST DB ?
NO
YES
321
PIN IN THE 2ND DB ?
YES
NO
323
STORING PIN IN THE SECOND DATABASE
325
PERMITTING ACCESS TO THE INTERNET GAME
327
CONSUMER PLAYING THE INTERNET GAME
329
REWARDING CONSUMERS ACCORDING TO THE OUTCOME OF THE INTERNET GAME
331
CONTINUE ?
YES
NO
END

FIG.3

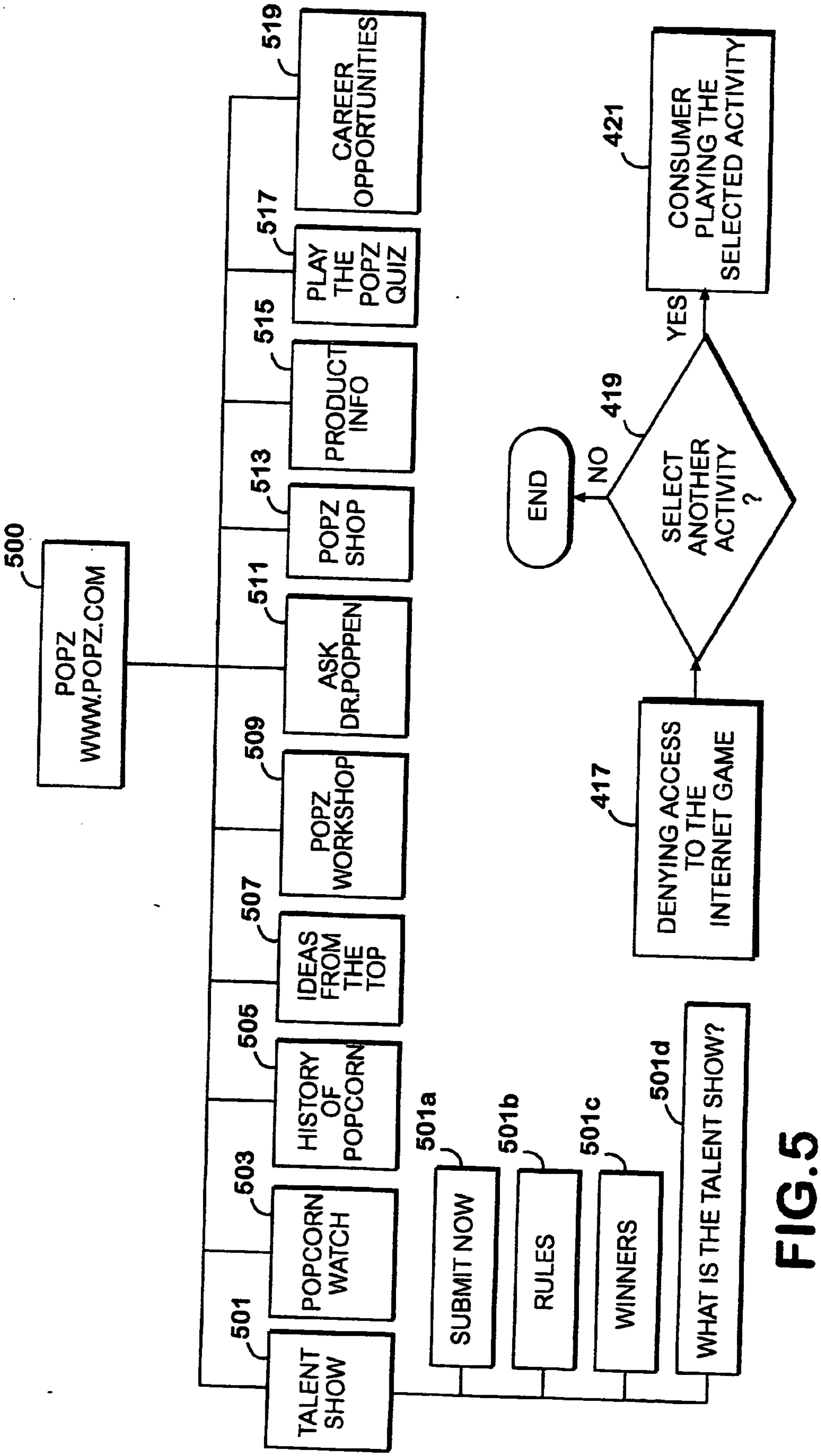

500
POPZ
WWW.POPZ.COM
501
TALENT SHOW
503
POPCORN WATCH
505
HISTORY OF POPCORN
507
IDEAS FROM THE TOP
509
POPZ WORKSHOP
511
ASK DR.POPPEN
513
POPZ SHOP
515
PRODUCT INFO
517
PLAY THE POPZ QUIZ
519
CAREER OPPORTUNITIES
501a
SUBMIT NOW
501b
RULES
501c
WINNERS
501d
WHAT IS THE TALENT SHOW?

FIG.5

417
DENYING ACCESS TO THE INTERNET GAME
419
SELECT ANOTHER ACTIVITY ?
NO
END
YES
421
CONSUMER PLAYING THE SELECTED ACTIVITY

FIG.4

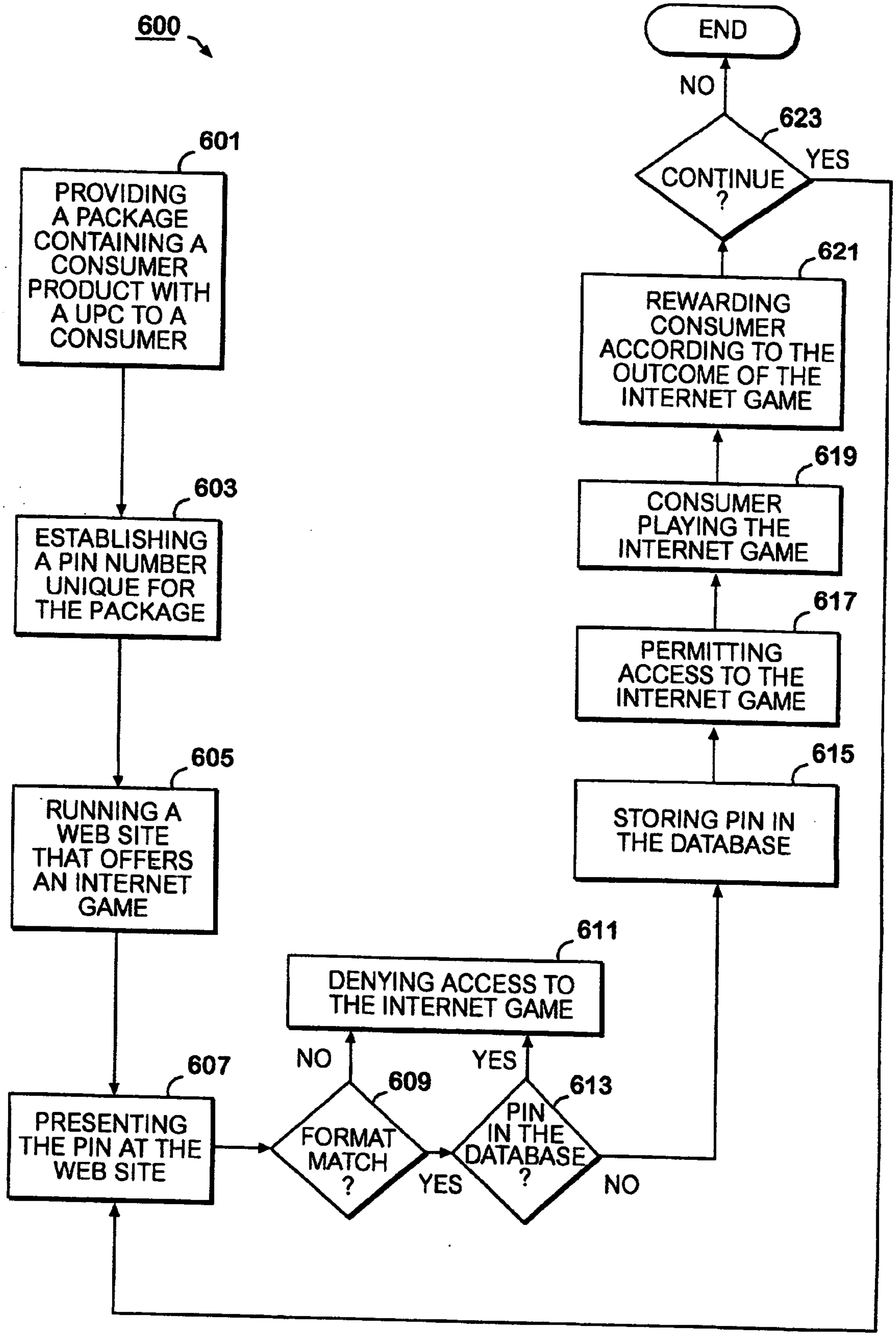

600
601
PROVIDING A PACKAGE CONTAINING A CONSUMER PRODUCT WITH A UPC TO A CONSUMER
603
ESTABLISHING A PIN NUMBER UNIQUE FOR THE PACKAGE
605
RUNNING A WEB SITE THAT OFFERS AN INTERNET GAME
607
PRESENTING THE PIN AT THE WEB SITE
609
FORMAT MATCH ?
NO
YES
611
DENYING ACCESS TO THE INTERNET GAME
613
PIN IN THE DATABASE ?
YES
NO
615
STORING PIN IN THE DATABASE
617
PERMITTING ACCESS TO THE INTERNET GAME
619
CONSUMER PLAYING THE INTERNET GAME
621
REWARDING CONSUMER ACCORDING TO THE OUTCOME OF THE INTERNET GAME
623
CONTINUE ?
YES
NO
END

FIG.6

METHOD OF CONSUMER PRODUCT PROMOTION OVER THE INTERNET USING UNIQUE PRODUCT PACKAGE NUMBERS

CROSS-REFERENCE TO RELATED PATENT APPLICATION

[0001] This application claims the benefit, pursuant to 35 U.S.C. § 120, of provisional U.S. Patent Application Ser. No. 60/206,573, filed May 23, 2000 entitled "METHODS OF COMMERCIAL PROMOTIONS USING AN INTERNET GAME SCHEME HAVING UNIQUE PRODUCT PACKAGE NUMBERS."

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention generally relates to consumer product promotion. More particularly, the present invention relates to methods and apparatus for consumer product promotion through the Internet using unique product package numbers.

[0004] 2. Description of the Related Art

[0005] Success of many consumer products depends on a successful marketing strategy. A common marketing strategy is for manufacturers to offer discount coupons, either in electronic form or in traditional paper form, which often use a Universal Product Code ("UPC") as an identification of a specific product and a particular manufacturer. One disadvantage of this approach is that the manufacturer who uses this marketing strategy has the administrative inconvenience and cost associated with preparing, distributing and collecting the coupons, which may negatively affect the desire of a manufacturer to utilize the marketing strategy. Moreover, burdens on consumers to collect, clip and properly use the coupons at the point of sale often limit the effectiveness of this approach.

[0006] With recent proliferation in personal computers, the availability of on-line services and the Internet, another marketing strategy is to use the Internet to provide a variety of Internet games, such as match games including Bingo and Keno, knowledge-based games such as spelling games, and skill-based games, to attract consumers and potential consumers for consumer products. Part or all of the universal product codes that designate these products and manufacturers may be used as Internet access passwords or keys. This marketing strategy provides a low cost promotion method and is capable of reaching consumers worldwide. However, because these passwords may be used repeatedly by a consumer, who may just purchase one product to gain access to the Internet game, a merchant may not achieve the full potential of the promotion by using this strategy.

[0007] Therefore, there exists a need for methods and system for consumer product promotion through the Internet that not only are attractive to consumers and potential consumers but may generate sales of a product as well.

SUMMARY OF THE INVENTION

[0008] The present invention provides methods and system for consumer product promotion through the Internet by offering an Internet game that offers prizes and is accessible by using a package identification number as a password, where the package identification number is uniquely associated with a package containing the consumer product and can only be used once to access the Internet game. By limiting the opportunity to play the Internet game to a consumer who has access to a package identification number that is valid for one entry only and offering the opportunity to win prizes by playing the Internet game, the consumer is encouraged to purchase more packages containing the consumer product and carrying the package identification numbers for more chances to play and win. Thus, the present invention generates brand loyalty in consumers and promotes the consumer product.

[0009] In one aspect of the present invention, a method for consumer product promotion through the Internet includes the steps of providing a plurality of packages each containing a consumer product identified by a universal product code to at least one consumer and establishing a package identification number having a predetermined format for each package, wherein the package identification numbers for the plurality of packages form a group of package identification numbers. The method further includes the steps of storing the package identification number for each package in a first database, establishing a cross-reference between the group of package identification numbers and the universal product code, storing the cross-reference between the group of package identification numbers and the universal product code in the first database, and employing a Web browser program to run a Web site that offers an Internet game, wherein the Web site is electronically coupled to the first database. The method permits access to the Internet game by the at least one consumer to play the Internet game upon presentation of a package identification number having the predetermined format over the Internet only if the package identification number has not been presented yet, and denies access to the Internet game by the at least one consumer to play the Internet game upon presentation of a package identification number having the predetermined over the Internet if the package identification number has been presented.

[0010] According to one embodiment of the invention, once the access to the Internet game is granted, the method includes the steps of employing the Web browser program to allow the at least one consumer to interactively play the Internet game, and rewarding the at least one consumer according to the outcome of the Internet game with one or more packages of the consumer product, one or more packages of other consumer products, or one or more opportunities to play the Internet game. If the access to the Internet game is denied, the method includes the steps of employing the Web browser program to allow the consumer to select another Internet-related activity other than the Internet game, and rewarding the consumer according to the outcome of the Internet-related activity with one or more packages of the consumer product, one or more packages of other consumer products, or one or more opportunities to play the Internet game.

[0011] In another aspect, the present invention relates to a method for consumer product promotion through the Internet. The method includes the steps of providing a package containing a consumer product identified by a universal product code to a consumer, establishing a package identification number having a predetermined format for the package, employing a Web browser program to run a Web site that offers an Internet game, and permitting access to the Internet game by the consumer to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies the following two conditions:

[0012] (i) the format of the package identification number matches a predetermined format, and

[0013] (ii) the package identification number has not been presented yet.

[0014] Moreover, the method includes the step of denying access to the Internet game by the consumer to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies at least one of the following two conditions:

[0015] (i) the format of the package identification number is not in match with the predetermined format; and

[0016] (ii) the package identification number has been presented.

[0017] In yet another aspect, the present invention relates to a system for consumer product promotion through the Internet, wherein the consumer product is identified by a universal product code and provided in a package to a consumer. In one embodiment, the system includes a number generator for establishing a package identification number having a format for the package, a memory device, and a processor coupled to the memory device and performing the following steps of employing a Web browser program to run a Web site that offers an Internet game, wherein the Web site is electronically coupled to the memory device, and permitting access to the Internet game by the consumer to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies the following two conditions:

[0018] (1) the format of the package identification number matches a predetermined format; and

[0019] (2) the package identification number has not been presented yet.

[0020] Additionally, the processor further performs the step of denying access to the Web site by the consumer to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies at least one of the following two conditions:

[0021] (1) the format of the package identification number is not in match with the predetermined format; and

[0022] (2) the package identification number has been presented.

[0023] The present invention further includes a computer program product in a computer readable medium of instructions. The computer program product has instructions within the computer readable medium for running a Web site that offers an Internet game. Furthermore, the computer program product has instructions within the computer readable medium for permitting access to the Internet game by a user to play the Internet game upon presentation of a package identification number over the Internet when the package identification number satisfies the following two conditions:

[0024] (1) the format of the package identification number matches a predetermined format; and

[0025] (2) the package identification number has not been presented yet, wherein the package identification number is associated with a package containing a consumer product identified by a universal product code.

[0026] Additionally, the computer program product includes instructions within the computer readable medium for denying access to the Internet game by the user to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies at least one of the following two conditions:

[0027] (i) the format of the package identification number is not in match with the predetermined format; and

[0028] (ii) the package identification number has been presented.

[0029] In one embodiment of the present invention, the consumer product is popcorn and the package containing popcorn is microwaveable. Alternatively, the consumer product can be other tangible products or even services that can be promoted by a brochure, for example. The package identification number is printed on the package and accessible by the consumer. Alternatively, the package identification number is printed on a printing medium that is associated with the package, where the printing medium can be a sticker or a label.

[0030] These and other aspects will become apparent from the following description of the preferred embodiment taken in conjunction with the following drawings, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] **FIG. 1** is a schematic representation of a system for the consumer product promotion over the Internet according to the present invention.

[0032] **FIG. 2** is a schematic representation of a package having a PIN number and a UPC code that can be utilized in the inventive system shown in **FIG. 1**.

[0033] **FIG. 3** is a flow chart showing one method for consumer product promotion over the Internet according to the present invention.

[0034] **FIG. 4** is a flow chart showing a process related to the method as shown in **FIG. 3**.

[0035] **FIG. 5** is a schematic representation of a Web site that can be utilized in the inventive system shown in **FIG. 1**.

[0036] **FIG. 6** is a flow chart showing an alternative method for consumer product promotion over the Internet according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0037] A preferred embodiment of the invention is now described in detail. Referring to the drawings, like numbers indicate like parts throughout the views. As used in the description herein and throughout the claims that follow, the meaning of "a,""an," and "the" includes plural reference unless the context clearly dictates otherwise. Also, as used in the description herein and throughout the claims that follow, the meaning of "in" includes "in" and "on" unless the context clearly dictates otherwise.

[0038] With reference to **FIG. 1**, the numeral **1** generally refers to a centralized processing system for the inventive method and system for consumer product promotion through the Internet. The centralized processing system **1** includes a processor or CPU **2** to which are connected to memory device **4** and output device **5**. Additionally, CPU **2** has a random number generator **3** that can generate numbers randomly or pseudo-randomly. The memory device **4** has at least one database resident therein. In the embodiment as shown in **FIG. 1**, memory device **4** has a first database **4*a*** and a second database **4*b***. Memory device **4** can have additional space. The output device **5** may include a printing device that can print a number generated by the random number generator **3** to a package **7**. CPU **2** also employs a Web browser program to run a Web site **6** that, among other things, offers an Internet game.

[0039] The package **7** contains at least one consumer product that is identified by a Universal Product Code ("UPC"). **FIG. 2** shows an exemplary package **27** in a bag form that contains microwaveable popcorns manufactured by Soller Ltd., Bennettsville, S.C. 29512. Package **27** can be formed from paper stock, paperboard, plastics or like. On one side of the package **27**, side **30**, there are imprinted a package identification number **32** ("PIN") unique to the package **27** and a UPC code **34**. The PIN number **32** is generated by the random number generator **3**. For security purposes, the PIN number **32** has at least 6 digits, preferably more than 10 digits, providing several billion possible code combinations. For the embodiment shown in **FIG. 2**, the PIN number **32** has 16 digits. The PIN number **32** can be directly imprinted to the package **27**. Alternatively, the PIN number **32** may be imprinted on a printing medium, such as a sticker or a label, which then can be associated with the Package **27**. The UPC code **34** contains a bar code portion **36** and a digital portion **38**. Generally, UPC bar code is used to identify products for point of sale retail applications such as grocery and retail stores. UPC bar code includes 4 parts: the first number is the system identifier, next 5 digits are the manufacturers assigned number, next 5 digits are the manufacturer's own assigned product number and the last digit is the check digit. As an example, the digital portion **38** as shown in **FIG. 2** has a combination (6 99804 00005 5).

[0040] The package **27** may have a marked portion **40** containing a promotion "Play 'n' Win"**42**, a trademark POPZ **44** and an Internet IP address www.gopopz.com **46**. The package **27** may also have a text portion **48** displaying Nutrition Facts **50**. Other additional information in form of text, graphical or both can be displayed on the package **27** as well.

[0041] With proper identification and having product packed therein, package **7** enters the stream of commerce **9** to reach consumers. Once a consumer obtains a package **7**, the consumer can then use the package identification number associated with the package **7** to access the Web site **6** through a communication network or Internet **24** from a terminal device or a computer **8**.

[0042] In one embodiment of the present invention, computer **8** has a host processor **12** with a display **14**, such as a monitor, having a graphic-user interface (GUI) **20** displaying data, text and graphic information and a key board receiving inputs from a user. The host processor **12** may have at least one peripheral device **10**, shown here as a printer, in operative communication with the host processor **12**. The printer **10** and host processor **12** can be in communication through any media, such as a direct wire connection **18**, or through a network. The GUI **20** is generated by a GUI code as part of the operating system (O/S) of the host processor **12**. The host processor **12** also is in communication with the Internet **24** through any media, such as a direct wire connection **22**, or through another network.

[0043] **FIG. 3** shows a first embodiment method **300** of the present invention to utilize the inventive system **100** shown in **FIG. 1** for consumer product promotion through the Internet. At step **301**, a plurality of packages are provided with each containing a consumer product identified by a universal product code. At step **303**, a package identification number ("PIN") having a predetermined format is established for each package by the processing system **1**, wherein the package identification numbers for the plurality of packages form a group of package identification numbers. The PIN number for each package can be generated by a random number generator **3**, which is a program employed by the CPU **2**. The predetermined format can be, for example, a sequence of randomly arranged Arabic numerals having a given length. In the embodiment shown in **FIG. 2**, the format of the PIN number **32** has 16 digits. Thus, for this embodiment, the predetermined format requires the PIN number to be a sequence of digits and to have 16 digits. Thus, combination (0191113219163601) has a format matching the predetermined format, and combination (0111856991), which only has a sequence of 10 digits, and combination (xyz1113219163601), which has a mix of alphabetic characters and Arabic numerals, do not have a format matching the predetermined format.

[0044] At step **305**, the PIN number for each package is stored in a first database **4*a***, which is a program resident in memory **4**. At step **307**, a cross-reference between the group of PIN numbers for the packages and the universal product code for the consumer product is established, and then stored in the first database **4*a*** at step **309**, by the CPU **2**. For example, for the package **27** shown in **FIG. 2**, it has a UPC code "6 99804 00005 5" for the microwave popcorns and a PIN number (0191113219163601) that has 16 digits. Thus, once the cross-reference between the group of PIN numbers for the packages **27** and the UPC code "6 99804 00005 5" for the microwave popcorns is established, any package from this manufacturer having a PIN number with 16 digits would contain the microwave popcorns. Consequently, the manufacturer may establish cross-references for each product and packages containing each product, which can be utilized for inventory control purpose and marketing purpose. For example, CPU **2** can simply count the number of access to the Web site **6** for a particular consumer product from the cross-references for the product and the PIN numbers for packages containing the product to assess the sales of the product in the market.

[**0045**] At step **311**, a Web browser program is employed to run a Web site **6** that offers an Internet game, wherein the Web site **6** has an IP address and is electronically coupled to the memory **4**. A consumer can access on the Web site **6** through an Internet service provider from the computer **8**. In fact, the Web site **6** is running 24 hours a day, 365 days a year and can be reached by anyone around the World. On the Web site **6**, several Internet activities are provided. As an embodiment shown in **FIG. 5, a** home page **500** for the Web site **6** has a Talent Show icon **501**, Popcorn Watch icon **503**, History of Popcorn **505**, Ideas from the Top icon **507**, POPZ Workshop icon **509**, Ask Dr. Poppen icon **511**, POPZ Shop icon **513**, Product Info icon **515**, Play the Popz Quiz **517**, and Career Opportunities icon **519**. Each icon represents an Internet related activity. At least one of them is an Internet game that may be interactively played by consumers. For the embodiment shown in **FIG. 5**, Play the Popz Quiz **517** is a game that may be interactively played by consumers. The Play the Popz Quiz game can take the form of a match game, a knowledge-based game, a skill-based game, any combination of them, or other types of available computer games. By clicking on each icon, a consumer can get information or interactively communicate with the Web site **6** in the form of sound, graphical, video, text, data, digital format, photo or a combination of them. Each icon may include more than one theme or sub-icons. For example, Talent Show icon **501** has a plurality of sub-icons including Submit Now icon **501***a*, Rules icon **501***b*, Winners icon **501***c*, and What Is the Talent Show icon **501***d*. More detailed information about each icon can be obtained from http://www.popz.com/, the information wherein is incorporated herein by reference each. Each icon and related contents can be updated from time to time.

[**0046**] Not every Internet activity offered on the Web site **6** can be freely accessed by a consumer. In particular, the present invention requires that the Internet game offered on the Web site **6** can only be accessed with a proper ID. Once the Internet game icon, i.e. icon **517** in the embodiment shown in **FIG. 5**, is clicked on, Web site **6** requires the consumer to present a package identification number or Internet PIN from a package containing the consumer product.

[**0047**] Referring back to **FIG. 3**, at step **313**, a consumer now presents a package identification number at Web site **6**. In operation, the consumer inputs the package identification number at the computer **8**, which is transmitted through the Internet **24** to and received by the Web site **6**. At step **315**, CPU **2** determines if the presented package identification number has the predetermined format. An advantage of checking the format first is that it provides a quick screening without committing too much computing resources as a full search and comparison in a database as required in the prior art. If not, at step **317**, the consumer is denied access to play the Internet game. If yes, at step **319**, CPU **2** further determines if the package identification number exists in the first database. If not, the consumer is denied access to play the Internet game. This step ensures that a number not generated by and stored in the centralized system **1** but accidentally having a format matched with the predetermined format will not have access to the Internet game. If yes, at step **321**, CPU **2** then determines if the package identification number exists in the second database. If yes, which indicates that the package identification number has been used before, the consumer is denied access to play the Internet game. This step ensures that the package identification number can only be used once to gain the access to play the Internet game. If the consumer wants to play the Internet game, he or she needs to have a new package identification number, which can be obtained from a package having the package identification number. The consumer is therefore encouraged to purchase more packages containing the consumer protect. If not, at step **323**, CPU **2** stores the package identification number in the second database that only contains PIN numbers that have been presented or used. At step **325**, the consumer is given access to the play the Internet game. At step **327**, the consumer plays the Internet game interactively and when the game is over, an outcome is shown in the Web site **6**. At step **329**, CPU **2** rewards the consumer according to the outcome of the Internet game. The consumer may be rewarded with one or more packages of the consumer product for free, one or more packages of other consumer products for free, or one or more opportunities, i.e., free PIN numbers, to play the Internet game. Additionally, a consumer may be rewarded with other prizes including houses, automobiles, computers, CDs, holiday vacation packages, etc. to further encourage the consumer to purchase the consumer product so that the consumer has more chances to play and win. At step **331**, the consumer has the option to continue to play the Internet game, which he or she will have access by presenting a new PIN number, or to stop.

[**0048**] Referring now to **FIG. 4**, if the access to the Internet game is denied at step **417**, a consumer is given a choice on the Web site **6** by CPU **2** to select another Internet-related activity other than the Internet game. If the consumer responds positively, at step **421**, the consumer plays the Internet-related activity interactively. CPU **2** may reward the consumer according to the outcome of the Internet-related activity with one or more packages of the consumer product, one or more packages of other consumer products, or one or more opportunities, i.e., free PIN numbers, to play the Internet game. Occasionally, free PIN numbers may be offered in the Web site **6** to further encourage consumers to play the Internet game and thereby increase their interests in purchasing packages having the PIN numbers.

[**0049**] **FIG. 6** shows another embodiment method **600** of the present invention to utilize the inventive system **100** shown in **FIG. 1** for consumer product promotion through the Internet. At step **601**, a package containing a consumer product identified by a universal product code is provided. At step **603**, a package identification number ("PIN") having a predetermined format is established for the package by the processing system **1**. At step **605**, a Web browser program is employed to run a Web site **6** that offers an Internet game. At step **607**, a consumer presents a package identification number at Web site **6**. At step **609**, CPU **2** determines if the presented package identification number has the predetermined format. If not, at step **611**, the consumer is denied access to play the Internet game. If yes, at step **613**, CPU **2** further determines if the package identification number exists in a database resident in memory **4**. If yes, which indicates that the package identification number has been used, the consumer is denied access to play the Internet game. If not, at step **615**, CPU **2** stores the package identification number in the database. At step **617**, the consumer is given access to the play the Internet game. At step **619**, the consumer plays the Internet game interactively and when the game is over, an outcome is shown in the Web site **6**. At step **621**, CPU **2** rewards the consumer according to the outcome of the Internet game with various prizes as discussed before. At step **623**, the consumer has the option to continue to play the Internet game, which he or she will have access by presenting a new PIN number, or to stop there.

[0050] Thus, for the embodiment shown in **FIG. 6**, CPU **2** permits access to the Internet game by a consumer to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies the following two conditions:

> **[0051]** (1) the format of the package identification number matches a predetermined format; and
>
> **[0052]** (2) the package identification number has not been presented.

[0053] Therefore, the Internet game may be played upon the presentation of a number that is not generated by the centralized processing system 1 but happens to have a format in match with the predetermined format. Even though, the number can only have one free pass to the Internet game. Nevertheless, this embodiment requires less computing power and memory space for processing and storing a huge database and responds to the consumers more promptly.

[0054] As those skilled in the art will appreciate, while the present invention has been described in the context of a fully functional centralized processing system interfacing with computers coupled through the Internet, the mechanism of the present invention is capable of being distributed in the form of a computer readable medium of instructions in a variety of forms, and the present invention applies equally regardless of the particular type of signal bearing media used to actually carry out the distribution. Examples of computer readable media include: recordable type media such as floppy disks and CD-ROMs and transmission type media such as digital, analog, optical and wireless communication links.

[0055] While there has been shown a preferred and alternate embodiments of the present invention, it is to be understood that certain changes can be made in the form and arrangement of the elements of the system and steps of the method as would be know to one a skill in the art without departing from the underlying scope of the invention as is particularly set forth in the claims. Furthermore, the embodiments described above are only intended to illustrate the principles of the present invention and are not intended to limit the claims to the disclosed elements.

What is claimed is:

1. A method for consumer product promotion through the Internet, comprising:

- a. providing a plurality of packages each containing a consumer product identified by a universal product code to at least one consumer;
- b. establishing a package identification number having a predetermined format for each package, wherein the package identification numbers for the plurality of packages form a group of package identification numbers;
- c. storing the package identification number for each package in a first database;
- d. storing establishing a cross-reference between the group of package identification numbers and the universal product code;
- e. saving the cross-reference between the group of package identification numbers and the universal product code in the first database;
- f. employing a Web browser program to run a Web site that offers an Internet game, wherein the Web site is electronically coupled to the first database;
- g. permitting access to the Internet game by the at least one consumer to play the Internet game upon presentation of a package identification number having the predetermined format over the Internet only if the package identification number has not been presented yet; and
- h. denying access to the Internet game by the at least one consumer to play the Internet game upon presentation of a package identification number having the predetermined over the Internet if the package identification number has been presented.

2. The method of claim 1, further comprising steps of:

- a. employing the Web browser program to allow the at least one consumer to interactively play the Internet game once the access to the Internet game is granted; and
- b. rewarding the at least one consumer according to the outcome of the Internet game with one or more packages of the consumer product, one or more packages of other consumer products, or one or more opportunities to play the Internet game.

3. The method of claim 1, further comprising steps of:

- a. employing the Web browser program to allow the consumer to select another Internet-related activity other than the Internet game once the access to the Internet game is denied; and
- b. rewarding the consumer according to the outcome of the Internet-related activity with one or more packages of the consumer product, one or more packages of other consumer products, or one or more opportunities to play the Internet game.

4. The method of claim 1, wherein the step of permitting access to the Web site further comprises the steps of:

- a. determining if the format of the package identification number for a package containing the consumer product matches the predetermined format;
- b. determining if the package identification number exists in the first database when the format of the package identification number for a package containing the consumer product matches the predetermined format;
- c. determining if the package identification number exists in a second database when the package identification number exists in the first database;
- d. permitting access to the Internet game by the at least one consumer if the package identification number does not exist in the second database; and
- e. storing the package identification number in the database.

5. The method of claim 1, wherein the package identification number is generated by a random number generator.

6. The method of claim 5, wherein the format of the package identification number is a sequence of randomly arranged Arabic numerals.

7. The method of claim 5, wherein the length of the package identification number is no less than six (6) digits.

8. The method of claim 1, wherein the package identification number is printed on the package and accessible by the at least one consumer.

9. The method of claim 1, wherein the package identification number is printed on a printing medium that is associated with the package.

10. The method of claim 9, wherein the printing medium includes a sticker or a label.

11. The method of claim 1, wherein the consumer product is popcorn and the package containing popcorn is microwaveable.

12. The method of claim 1, further comprising a step of counting the number of accesses to the Web site for the consumer product from the cross-reference between the group of package identification numbers and the universal product code.

13. A method for consumer product promotion through the Internet, comprising:

a. providing a package containing a consumer product identified by a universal product code to a consumer;

b. establishing a package identification number having a format for the package;

c. employing a Web browser program to run a Web site that offers an Internet game; and

d. permitting access to the Internet game by the consumer to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies the following two conditions:

(i) the format of the package identification number matches a predetermined format; and

(ii) the package identification number has not been presented yet.

14. The method of claim 13, further comprising steps of:

a. employing the Web browser program to allow the consumer to interactively play the Internet game once the access is granted; and

b. rewarding the consumer according to the outcome of the Internet game with one or more packages of the consumer product, one or more packages of other consumer products, or one or more opportunities to lay the Internet game.

15. The method of claim 13, further comprising the step of denying access to the Internet game by the consumer to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies at least one of the following two conditions:

(i) the format of the package identification number is not in match with the predetermined format; and

(ii) the package identification number has been presented.

16. The method of claim 15, further comprising steps of:

a. employing the Web browser program to allow the consumer to select another Internet-related activity other than the Internet game once the access is denied; and

b. rewarding the consumer according to the outcome of the Internet-related activity with one or more packages of the consumer product, one or more packages of other consumer products, or one or more opportunities to play the Internet game.

17. The method of claim 13, wherein the step of permitting access to the Internet game further comprises the steps of:

a. determining if the format of the package identification number for a package containing the consumer product matches a predetermined format;

b. determining if the package identification number has been present in the database when the format of the package identification number for a package containing the consumer product matches the predetermined format;

c. permitting access to the Web site by the at least one consumer if the package identification number has not been present in the database; and

d. storing the package identification number in the database.

18. The method of claim 13, wherein the package identification number is generated by a random number generator.

19. The method of claim 18, wherein the format of the package identification number is a sequence of randomly arranged Arabic numerals.

20. The method of claim 18, wherein the length of the package identification number is no less than six (6) digits.

21. The method of claim 13, wherein the package identification number is printed on the package and accessible by the consumer.

22. The method of claim 13, wherein the package identification number is printed on a printing medium that is associated with the package.

23. The method of claim 22, wherein the printing medium includes a sticker or a label.

24. The method of claim 23, wherein the consumer product is popcorn and the package containing popcorn is microwaveable.

25. A system for consumer product promotion through the Internet, wherein the consumer product is identified by a universal product code and provided in a package to a consumer, comprising:

a. a number generator for establishing a package identification number having a format for the package;

b. a memory device; and

c. a processor coupled to the memory device and performing the following steps of:

(i) employing a Web browser program to run a Web site that offers an Internet game, wherein the Web site is electronically coupled to the memory device; and

(ii) permitting access to the Internet game by the consumer to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies the following two conditions:

(1) the format of the package identification number matches a predetermined format; and

(2) the package identification number has not been presented yet.

26. The system of claim 25, wherein the processor further performs the step of denying access to the Web site by the consumer to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies at least one of the following two conditions:

(1) the format of the package identification number is not in match with the predetermined format; and

(2) the package identification number has been presented.

27. The system of claim 25, wherein the processor further performs the steps of:

a. employing the Web browser program to allow the consumer to interactively play the Internet game once the access is granted; and

b. rewarding the consumer according to the outcome of the Internet game with one or more packages of the consumer product, one or more packages of other consumer products, or one or more opportunities to play the Internet game.

28. The system of claim 26, wherein the processor further performs the steps of:

a. employing the Web browser program to allow the consumer to select another Internet-related activity other than the Internet game once the access is denied; and

b. rewarding the consumer according to the outcome of the Internet-related activity with one or more packages of the consumer product, one or more packages of other consumer products, or one or more opportunities to play the Internet game.

29. The system of claim 25, wherein when performing the step of permitting access to the Web site, the processor further performs the steps of:

a. determining if the format of the package identification number for a package containing the consumer product matches the predetermined format;

b. determining if the package identification number has been present in a database resident in the memory device when the format of the package identification number for a package containing the consumer product matches the predetermined format;

c. permitting access to the Web site by the consumer if the package identification number has not been present in the database; and

d. storing the package identification number in the database.

30. The system of claim 25, wherein the number generator comprises a random number generator program resident in the memory device.

31. The system of claim 30, wherein the format of the package identification number is a sequence of randomly arranged Arabic numerals generated by the random number generator program.

32. The system of claim 31, wherein the length of the package identification number is no less than six (6) digits.

33. The system of claim 31, wherein the package identification number is printed on the package and accessible by the consumer.

34. The system of claim 31, wherein the package identification number is printed on a printing medium that is associated with the package.

35. The system of claim 34, wherein the printing medium includes a sticker or a label.

36. The system of claim 35, wherein the consumer product is popcorn and the package containing popcorn is microwaveable.

37. A computer program product in a computer readable medium of instructions, comprising:

a. instructions within the computer readable medium for running a Web site that offers an Internet game; and

b. instructions within the computer readable medium for permitting access to the Internet game by a user to play the Internet game upon presentation of a package identification number over the Internet when the package identification number satisfies the following two conditions:

(1) the format of the package identification number matches a predetermined format; and

(2) the package identification number has not been presented yet, wherein the package identification number is associated with a package containing a consumer product identified by a universal product code.

38. The computer program product of claim 37, further comprising instructions within the computer readable medium for denying access to the Internet game by the user to play the Internet game upon presentation of the package identification number over the Internet when the package identification number satisfies at least one of the following two conditions:

(i) the format of the package identification number is not in match with the predetermined format; and

(ii) the package identification number has been presented.

39. The computer program product of claim 38, further comprising:

a. instructions within the computer readable medium for allowing the user to select an Internet-related activity other than the Internet game once the access is denied; and

b. instructions within the computer readable medium for rewarding the user according to the outcome of the Internet related activity with one or more packages of the consumer product, one or more packages of other consumer products or one or more opportunities to play the Internet game.

40. The computer program product of claim 37, further comprising:

a. instructions within the computer readable medium for allowing the user to interactively play the Internet game once the access is granted; and

b. instructions within the computer readable medium for rewarding the user according to the outcome of the Internet game with one or more packages of the consumer product, one or more packages of other consumer products, or one or more opportunities to play the Internet game.

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